

United Nations Conference on Trade and Development

**PROTECTING AND PROMOTING  
TRADITIONAL KNOWLEDGE:  
SYSTEMS, NATIONAL EXPERIENCES AND  
INTERNATIONAL DIMENSIONS**

Sophia Twarog and Promila Kapoor, Editors



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## Foreword

The preservation, protection and promotion of the traditional knowledge, innovations and practices of local and indigenous communities (TK) is of key importance for developing countries. Their rich endowment of TK and biodiversity plays a critical role in their health care, food security, culture, religion, identity, environment, sustainable development and trade. It is particularly crucial for the most vulnerable segments of their societies, and for indigenous peoples worldwide.

But this valuable asset is at risk in many parts of the world, and here are concerns that this knowledge is being used and patented by third parties, with few or none of the benefits being shared with the original TK-holders, and without their prior informed consent. While such concerns have pushed TK to the forefront of the international agenda, the best ways of addressing the range of issues related to its preservation, protection, further development and sustainable use are not yet clear.

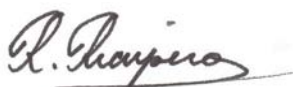
The different facets of these complex issues are being addressed in a number of forums. The Convention on Biological Diversity highlights the important role of TK and local and indigenous communities in the preservation of biological diversity. Intellectual property aspects are being studied in the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. The UN Permanent Forum on Indigenous Issues highlights issues of particular concern to indigenous peoples. Developing countries are also raising international aspects of TK protection in the World Trade Organization, notably in the TRIPS Council and the 2001 Doha Ministerial Declaration.

In 2000, UNCTAD's member States decided in the Bangkok Plan of Action to address this issue as part of the organization's work on trade, environment and development. As a knowledge-based institution that is the focal point within the United Nations for the integrated treatment of trade and development and related issues, UNCTAD has an important role to play in the debate. In this forum, countries can explore new ideas from a holistic development perspective, enhance understanding of complex issues, exchange their experiences with different approaches and build consensus. UNCTAD can further assist developing countries through its technical cooperation activities.

This book, a collection of papers prepared in conjunction with an UNCTAD expert meeting on TK, attempts to advance discussion and understanding of the issues by focusing on three key questions:

- What are the importance and scope of TK, particularly in the areas of agriculture and medicine?
- How can TK be preserved and protected?
- How can this valuable resource be harnessed for development and trade to benefit the TK-holding communities and countries?

The answer to these questions are evolving as experiences are gained and shared. Moreover, as the types of TK, and related concerns and objectives, are unique to each country and community, solutions must also be tailored to local circumstances. By presenting a wide range of experiences and perspectives on this subject, this book provides the reader with ample food for thought in designing such solutions.



Rubens Ricupero  
Secretary General of UNCTAD

## Acknowledgements

This book has been made possible by the efforts of a great many individuals.

This is a collection of papers emanating from the Expert Meeting in October 2000. Under the supervision of Rene Vossenaar, Sophia Twarog was the main organizer of the meeting. UNCTAD secretariat staff members Sophia Twarog, Rene Vossenaar, Ulrich Hoffmann, Veena Jha and Graham Dufield wrote the background note, *Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices*, by the UNCTAD secretariat. They also contributed to the preparation and servicing of the meeting, as did Maria Perez-Esteve, Rafael Sanchez, Alexey Vikhlyaev, Florence Labregere, Brook Boyer, Angela Thompson and Lauren Murphy. The staff of UNCTAD's Intergovernmental Support Service - including Arkady Sarkissov, the secretary of the meeting, and Chris Macfarquhar, who oversaw the preparation of the report - performed their duties with their usual professionalism and skill. The Rockefeller Foundation generously financed the travel of five indigenous representatives. Special thanks are due to Ambassador Ronald Saborio Soto (Costa Rica) who chaired the meeting, and Ambassador Sivaramen Palayathan (Mauritius), who acted as vice-chairperson.

Valuable comments and inputs on the background note for the Expert Meeting (in Appendix II) were received from Henrietta Marrie (CBD secretariat), Richard Wilder, Shakeel Bhatti and Wend Wendland (WIPO secretariat), Thu-Lang Tran-Wasescha, Alejandro Gamboa and Doaa Abdel-Motaal (WTO secretariat), Clive Stannard (FAO secretariat), Xiaorui Zhang (WHO secretariat), Jorge Cabrera (Costa Rica), Atul Kaushik (India), Leo Palma (Philippines), Francisco Cannabrava (Brazil), Suman Sahai (Gene Campaign), Renee Vellve (GRAIN), and UNCTAD staff members Taffere Tesfachew, Salvano Briceno, Rafael Sanchez, Rik Kutsch Lojenga, Anida Yupari, Mina Mashayekhi, Zeljka Kozul-Wright and Kathy Stokes.

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## Acronyms

ABS	access and benefit sharing
CBD	Convention on Biological Diversity
CBO	community-based organization
COP	Conference of the Parties
CGRFA	Commission on Genetic Resources for Food and Agriculture
FAO	Food and Agriculture Organization
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GI	geographical indication
GNP	gross national product
ILO	International Labour Organization
IP	intellectual property
IPRGI	International Plant Genetic Resources Institute
IPR	intellectual property rights
IUCN	The World Conservation Union
IUPGR	International Undertaking on Plant Genetic Resources for Food and Agriculture
MTA	material transfer agreement
NBA	National Biodiversity Authority (of India)
NGO	non-governmental organization
NTFP	non-timber forest product
NWFP	non-wood forest product (generally excludes fuelwood and construction materials for local use)
OAU	Organization of African Unity
OECD	Organisation for Economic Co-operation and Development
PBR	plant breeders' rights
PGR	plant genetic resources
PGRFA	plant genetic resources for food and agriculture
PIC	prior informed consent
PVP	plant variety protection
R&D	research and development
SDC	Swiss Agency for Development and Cooperation
TIP Rights	traditional intellectual property rights
TK	traditional knowledge; traditional and indigenous knowledge; traditional knowledge, innovations, and practices
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UPOV	The International Union for the Protection of New Varieties of Plants
US	United States
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WTO	World Trade Organization

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# INTRODUCTION AND OVERVIEW

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## Background

This book contains a unique collection of perspectives and national experiences from around the world regarding the protection of traditional knowledge, innovations and practices (TK).<sup>1</sup> It takes a broad view of the subject, addressing issues ranging from the importance of TK for communities, countries and the global economy to means of preserving and protecting it as well as harnessing its potential for development and ensuring equitable distribution of economic benefits derived from TK.

In recent years, the protection of TK has received increased attention in various international forums, including the Convention on Biological Diversity (CBD), the World Intellectual Property Organization (WIPO), the International Labour Organization (ILO), the Food and Agriculture Organization (FAO), the World Health Organization (WHO), the UN Educational, Scientific and Cultural Organization (UNESCO) and the UN Commission on Human Rights. There have been calls for analysis and exchange of information on the effectiveness of existing systems of protection such as copyrights, geographical indications, trade marks, access and benefit-sharing (ABS) mechanisms, plant variety protection, *sui generis* systems, customary laws, voluntary measures, codes of conduct, TK registers and the like, and for the development of an international framework.

In February 2000, UNCTAD's member States decided to address the protection of TK as part of the organization's work in the area of trade and environment. The Plan of Action adopted by UNCTAD's tenth Conference stated that "UNCTAD should also, in full cooperation with other relevant organizations, in particular and where appropriate with WIPO and WHO, promote analysis and consensus building with a view to identifying issues that could yield potential benefits to developing countries". It specifies that this work should focus on, among other things, "taking into account the objectives and provisions of the Convention on Biological Diversity and the TRIPS Agreement, studying ways to protect traditional knowledge, innovations and practices of local and indigenous communities and enhance cooperation on research and development on technologies associated with the sustainable use of biological resources".<sup>2</sup>

Also in 2000, UNCTAD convened an Expert Meeting on Systems and National Experiences for the Protection of Traditional Knowledge, Innovations and Practices (Geneva, 30 October – 1 November). In preparing this meeting, the secretariat worked closely with the secretariats of other intergovernmental organizations, in particular the CBD, WIPO, WHO and the World Trade Organization (WTO). More than 250 experts from 80 countries participated (in their individual capacities), including experts from Governments, indigenous groups, non-governmental organizations (NGOs), academia, private companies, and international agencies.

To facilitate a structured exchange of ideas and experiences at the meeting, experts were invited to prepare short papers in response to a list of questions<sup>3</sup> addressing three key issues:

- What is the role of TK, particularly in the health care and agriculture sectors?
- Why and how should TK be protected?
- How can TK be best harnessed for development and trade?

A number of papers capturing an array of diverse country experiences and institutional and individual perspectives were prepared. So that others might also benefit from the wealth of information contained in these papers, the Expert Meeting and the meeting of the Commission on Trade in Goods and Services, and Commodities a few months later recommended that these be published. Thus the idea for this book was born.

## Overview of the book

The book contains 46 papers by experts from Latin America (9), Africa (6), Asia and the Pacific (9), Europe (9), intergovernmental organizations (10) and international civil society groups (3). These papers have been streamlined and edited.

The three parts of this book correspond to the three key questions above. An attempt was made by the editors to position each paper according to the main issue addressed. However, many papers contain responses to two or even all three of the questions. Thus, the following overview is arranged thematically and highlights relevant information contained in papers throughout the book.

### ***Part one: the role of traditional knowledge in health care and agriculture***

Part one of this book contains 9 papers that focus on the important role of TK in the fields of medicine and agriculture. These sectors were chosen for special attention in the Expert Meeting because they provide the basis for survival for the majority of the population in developing countries, particularly the poorer and more marginalized segments, including indigenous groups, women and rural communities.

Several lessons have emerged from national experiences for promoting the preservation, further development, sustainable use and commercialization of TK in these sectors. Two important factors are the proactivity of national and local governments and interactions between traditional practitioners and “modern” scientists/researchers.

#### *Traditional medicine*

Papers throughout the book stress the critical role of traditional medicine in primary health care in developing countries. There has been a recent global upsurge in the use of traditional medicine and complementary and alternative medicine in developing and developed countries alike (Zhang, Sahai). Zhang highlights particular difficulties in protecting traditional medicinal knowledge using classic instruments for the protection of intellectual property rights (IPR).

The papers by Le Quy (Viet Nam) and Dakuyo (Burkina Faso) describe the successful ways in which those countries' Governments have promoted traditional medicine and facilitated interaction between it and western/allopathic medicine. Mhame (Tanzania), on the other hand, reports that his Government has taken a less proactive role and that consequently the sector is not as fully developed. Shenton argues for a more effective integration of traditional healers in HIV prevention and treatment programmes in Africa.

#### *Agriculture*

Some papers illustrate the importance of the interaction between *in situ* and *ex situ* conservation of traditional agricultural varieties and partnerships between traditional farmers and researchers. Le Quy (Viet Nam) and Fenta (Ethiopia) describe successful projects of this kind in their countries. The “elite landraces” developed under Ethiopia’s “seeds of survival programme” outperformed their high-external-input counterparts. Guedes and Sampaio present a case study where traditional seed varieties that had disappeared (with a resulting loss of cultural identity among the Kraho Indians) were reintroduced into the community by the Brazilian Agricultural Research Corporation, with positive nutritional and cultural results. Anishetty outlines a number of FAO activities aimed at the conservation and further development of agro-biodiversity and associated TK.

Tansey calls for more public research and development funds to be channeled to supporting participative research with TK-using communities, to strengthen their innovative capacity and further develop their farming systems. This is particularly important against the backdrop of the changing global food system, where power has been steadily shifting away from small producers.



## ***Part two: protecting traditional knowledge***

Part two of this book contains 26 papers that focus on means of protecting traditional knowledge at the national, regional and international levels. Authors recount efforts in Latin America, Africa, Asia and the Pacific to use existing IPR instruments as well as to develop *sui generis* systems for the protection of TK, along with initiatives related to ABS and TK registries. Regional approaches to *sui generis* systems for ABS and TK protection in the Andean Community and Africa are also described. The international dimension of TK protection is addressed in many of the above-mentioned papers as well as in those from international organizations working in this field and representatives of civil society.

In discussions on the protection of TK, it is important to remember that the term may be used loosely to refer to a number of different objectives. Different objectives require different sets of implementation tools.

Experts highlight a number of reasons why the protection of TK is important. These include improving the livelihoods of TK holders, deriving benefits for the national economy, preventing biopiracy and ensuring the long-term viability of natural ecosystems (Dutfield, Hamwey, Kaushik et al). Hamwey stresses the important role TK has played in the prevention of soil degradation, fisheries depletion, biodiversity erosion and deforestation.

Many authors express concern about the alarming loss of TK throughout the world. Oviedo, Gonzales and Maffi draw attention to the imminent extinction crisis affecting the world's diverse cultures and languages, 90 per cent of which will likely disappear in the next 100 years. They also point out the high correlation between cultural, linguistic and biological diversity.

A number of authors identify root causes of TK erosion in their countries. These include the adoption of modern intensive agricultural practices using high-yield hybrid plant varieties (Le Quy, Fenta, Guedes and Sampaio, Ahmed, Sahai), displacement of communities owing to massive logging and mining projects (Blanco), modernization of the medical system (Kumar), and waning interest by the younger generation (Sahai).

Many papers emphasize that TK cannot be adequately protected under the present conventional IPR regimes (including elements such as patents, plant variety protection, trademarks, designs and copyrights). These regimes generally protect individual property rights, whereas ownership of TK is, by and large, collective. Since TK is developed over time and is either codified in ancient texts or retained in oral traditions over generations, it does not have the attributes of novelty and innovation, which are necessary for granting of patents. In addition, different communities quite often hold similar knowledge (CBD).

A number of experts stress that the current IPR system is inappropriate for the recognition and protection of TK because of inherent conflicts between these two systems (Indigenous Groups, da Cunha, Ekpere, Solomon). They emphasize the holistic cosmologies of indigenous and local communities and stress that artificially dividing these into separate legal categories is inappropriate and unacceptable. Nakashima warns that IPR and science can lead to fragmentation of TK systems.

Several authors (Kaushik, Kumar, Mbeva, Indigenous Groups et al.) point out, with supporting examples, that the current system does nothing to prevent biopiracy and TK piracy. Mbeva also describes a number of practical realities that prevent TK holders from using conventional IPR to protect their TK. These include, for example, difficulty in formulating requests that meet stringent IPR application requirements, limited financial resources to cover high application fees and eventual enforcement costs, lack of information, and the like.

There is general consensus that new approaches and measures (*sui generis* systems) that combine tools in an appropriate way need to be developed for the protection of TK at the national and international levels. (See, for example, Oviedo et al., Solomon, Biber-Klemm, Cabrera, Umaña, Zhang, Nakashima, Kaushik, Sahai, da Cunha, Pacón, Ondrusova). These systems should be developed in close consultation with indigenous and local communities. A clear definition of TK would facilitate legislative measures for its protection (CBD, Dutfield, Bhatti).

From an industry perspective, Roberts stresses that any solution should be simple and practical; should not restrict knowledge already in the public domain; and should be consistent with existing forms of IPR.

Many papers indicate that the authors' countries did not, at the time of writing, have a specific law for protecting TK (Burkina Faso, Czech Republic, Ethiopia, Indonesia, Malaysia, Sri Lanka, Tanzania, Viet Nam). However, some countries (Bangladesh, Bolivia, Brazil, Colombia, Costa Rica, India, Panama, Peru, Philippines, Venezuela) have taken steps to draft or pass legislation to recognize and protect the collective rights of traditional communities and indigenous people and/or to govern access to TK associated with biodiversity and genetic resources. Even in those countries, however, experience with the implementation, enforcement and impact of TK-related legislation and initiatives is still fairly limited.

Twarog calls for a holistic approach to the development of national TK regimes. National assessments of the types of TK and existing relevant legislation and institutional arrangements should be followed by wide multi-stakeholder consultations to determine priority concerns and objectives. Countries can then choose from a menu of options for each objective.

Experts identify a number of measures that can help protect TK. Solomon and Indigenous Groups stress the importance of strengthening and recognizing customary law and practices of local and indigenous communities. Measures to strengthen the communities themselves are also emphasized by many (e.g. Karbolo, Oveido et al., Schaefer, Twarog).

Documentation of TK in the form of databases or registries is being carried out in some countries (e.g. India, Panama, Peru, Venezuela) and is seen as a valuable way forward in others. The objectives of these registries range from TK and biodiversity preservation at the local community level, to establishing rights to produce and sell indigenous handicrafts at the national level, to providing evidence of prior art to prevent inappropriate patents at the international level.

Two regional initiatives are described. In Africa, the OAU Model Law involving communities' collective rights can serve as a basis for developing national legislation (see Ekpere as well as the full text in Appendix III). In the Andean region, through Decision 391 of the Andean Community (Bolivia, Colombia, Ecuador, Peru and Venezuela), countries have agreed on a Common Regime on Access to Genetic Resources, which also covers associated TK. Papers by Pacón, Pereyra, Niño et al., and Pardo outline national experiences with this Decision and other measures. Ruiz assesses the Decision's implementation process and recommends simplification of access procedures.

A number of intergovernmental organizations have carried out work related to the protection of TK. The Executive Secretary of the CBD highlights articles of the Convention relevant to the protection of TK and related work carried out through the year 2000. Bhatti describes WIPO's recent work on TK, with a focus on outcomes of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore between 2001 and 2003, as well as cooperation with other intergovernmental organizations, particularly CBD and FAO. Greengrass states that the International Convention for the Protection of New Varieties of Plants (the UPOV Convention) is silent on the subject of TK, but that it has some features relevant to protection of the interests of farmers and local communities.

The WTO, particularly the TRIPS Agreement, is also silent on this subject. There have, however, been a number of proposals from developing countries in this forum, including for a requirement in patent applications to disclose the source of origin of genetic resources and TK used in the invention, as well as evidence of prior informed consent and benefit sharing. (See, for example, Kaushik, Ruiz and Twarog.) This could help prevent inappropriate patents and facilitate benefit sharing. Expanding the scope of Article 23 of TRIPS to strengthen protection of geographical indications is also recommended by some.

### ***Part three: harnessing traditional knowledge for development***

Part three of this book contains 11 papers highlighting the importance of TK in development and trade, and examining strategies for harnessing its potential.



*TK in development*

TK is often an undervalued and underutilized resource in the development process. Several experts point out that TK is in fact the key to sustainable development at the local level. TK is a vital element of the social capital of the poor and constitutes their main asset in their efforts to achieve control of their own lives (Gorjestani, Hamwey, Rahman, Bhatti).

Karbolu highlights the need for new development paradigms based on the values, worldviews and priority needs of indigenous and local communities. The communities themselves must be the drivers of this process, not passive passengers. Development activities should strengthen the existing sources of livelihood of indigenous and local communities, not replace them with something completely new and alien.

Incorporating TK, existing community institutions, and appropriate indigenous technology into development projects can greatly increase their efficiency, effectiveness and sustainability and at the same time empower the communities (Gorjestani, Fenta, Karbolu). The impact of TK can be further leveraged using modern technologies (e.g. communication technologies) as well as scientific knowledge of the local ecosystem. TK should be fully integrated into strategies for development and for resource management (Gorjestani, Rahman, Schaefer).

It is important to protect TK, but also to foster its further development. Community-to-community exchanges and the establishment of national and regional networks of TK holders can play an important role here (Gorjestani, Schaefer).

*Supporting the local and national development, production, commercialization and export of TK-based products*

TK-based goods and services provide interesting opportunities for domestic sales and exports. These goods include non-wood forest products, traditional agricultural products, herbal medicines, cultural heritage tourism, and handicrafts (Yupari et al., Solomon, Suhai, Kaushik). Kaushik underlines the need to add value to TK in order to convert it into economically profitable enterprises.

Governments and other organizations can support the development of TK-based products in a number of ways. For example:

- they can provide clear, coherent and predictable legal frameworks
- ease access to capital, including micro-credit; enhance entrepreneurial capacities
- support grassroots innovations; facilitate access to markets and market information
- promote interactions between traditional and modern sectors
- initiate multi-stakeholder dialogues and build partnerships with local communities and civil society
- promote biodiversity conservation, and
- take a range of measures to preserve the identity and viability of local and indigenous communities (see e.g. Yupari et al., Blanco, Sahai, Kaushik, Bhatti, Karbolu, Schaefer, Twarog).

In the Philippines, for example, the Department of Trade and Industry has provided support programmes to enhance the product competitiveness of handicrafts. These programmes involve:

- conducting product development sessions
- introducing new processes and equipment
- providing marketing support
- assisting entrepreneurs in obtaining finance through bank referrals and a micro-credit scheme
- productivity improvement programmes such as promoting industry clustering (e.g. craft villages), and
- establishing production and training centres (Blanco).

In India, governments at the national and state levels have provided incentives and infrastructural support for the production and marketing of TK-derived products. The National Innovation Foundation was also created to support grassroots innovations (Sahai, Kaushik).

Karbolu describes a range of successful development activities carried out over the past two decades in the framework of a Maasi community-run project in Kenya. These activities include support to a number of small-scale rural industries based on locally available materials, expertise and labour.

Sahai points out that sales of TK-based products provide important sources of income for local communities and can give them incentives to preserve their TK and biodiversity resources. The Internet offers new opportunities for reaching global markets. However, extreme care is needed to avoid over-harvesting of natural resources, which can easily lead to species extinction. Sustainability has to be built in at several levels. Key elements of supporting sustainability include increasing awareness, training in sustainable harvesting, cultivating medicinal plants, increasing the value added at the community level, and increasing community control over local resource use.

### *Use by third parties*

TK can also provide valuable leads for third parties in the development of useful products and processes, which can save modern industry time and money (Yupari et al.). Benefits should be equitably shared with the countries providing the genetic resources and the communities providing the knowledge. Currently this is often not the case. Therefore, several experts emphasize the importance of implementing CBD articles related to ABS (CBD, Kumar, Sahai, Kaushik, Yupari et al., Schaefer, etc.). Suggestions for benefit sharing include direct contracts with communities, establishment of national or regional funds to collect revenue on behalf of the communities, a global biocollecting society and access fees for TK databases (Sahai, Kumar, etc.).

Others warn that that the financial returns on bioprospecting have been overrated and that ABS regimes to date have often focused more on controlling access than on promoting it. This, combined with legal uncertainty has in some cases discouraged potential involvement by business (Cabrera, Ruiz).

Moreover, Solomon and Indigenous Groups point out that the use and exploitation of indigenous knowledge and culture by non-indigenous people can be highly offensive. As commercial interest in indigenous culture, artwork and knowledge continues to grow, tribes need to retain control over, regulate and protect their cultural heritage rights.

## **Appendix**

The Appendices contain the relevant UNCTAD documentation.

Appendices I and II contain documents circulated prior to the Expert Meeting:

- The *Guidelines for submission to the expert meeting, including a list of possible topics to be addressed* were contained in the Provisional agenda of and Notification for the meeting to guide experts in the preparation of their papers and presentations.
- The *background note by the secretariat* for the Expert Meeting provides an overview of the subject. It includes an analysis of the role of TK in the global economy, systems for protecting TK, and harnessing TK for development and trade.

Appendices III - V contain documents reflecting outcomes of UNCTAD meetings:

- The outcome of the Expert Meeting reflects the diversity of the views expressed and summarizes the experts' conclusions and recommendations.
- The outcome of the Commission on Trade in Goods and Services, and Commodities takes note of the Expert Meeting outcome and makes agreed recommendations to Governments, the international community and UNCTAD.
- The communiqué of the International Seminar on Systems for the Protection and Commercialization of Traditional Knowledge, organized jointly by the Government of India and UNCTAD in New Delhi (3–5 April 2002), reflects the views of 14 developing-country Governments.

Finally, Appendix VI includes the full text of the *African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders and for the Regulation of Access to Biological Resources*, often referred to as the Organization of African Unity (OAU) Model Law.

## The way forward

The Expert Meeting and the papers in this book provide much useful information and a range of perspectives on TK-related topics. Experts describe the important role played by TK in their countries, particularly in health care and agriculture. They express concern about erosion of TK. They argue for its preservation, protection and sustainable use. They share their experiences with the use of a range of measures to meet these objectives.

Developments in the TK arena are taking place at a fast pace. Thus, by the time this book reaches the hands of readers, systems to protect TK at the national and regional levels may have already evolved further; for example, legislation pending at the time of writing may have been adopted in the interim. The Peruvian law, for instance, was adopted in August 2002, and a Regional Framework and Model Law for the Protection of Traditional Knowledge and Expressions of Culture have been developed for Pacific Island countries.

Various intergovernmental processes have also been progressing. In the CBD, for example, the Bonn Guidelines on ABS were adopted by COP VI in April 2002. In February 2004, CBD's COP7 adopted the Akwé Kon voluntary guidelines for the conduct of cultural, environmental and social impact assessment regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities, by decision VII/16F. In addition, in decision VII/16H, the Working Group on Article 8(j) was requested to further develop elements for *sui generis* systems of TK relevant for the conservation and sustainable use of biodiversity. Finally, in decision VII/19D, the COP mandated the Ad Hoc Open-ended Working Group on Access and Benefit-sharing with the collaboration of the Ad Hoc Open ended Inter-sessional Working Group on Article 8(j) and related provisions to elaborate an international regime on access to genetic resources and benefit-sharing.

In September 2003, the mandate of the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore was extended. Work over the next two years will focus on international dimensions, not excluding the possible development of an international instrument or instruments in this field. The UNESCO International Convention for the Safeguarding of the Intangible Heritage was adopted in 2003. A new UNESCO convention on the promotion of the diversity of cultural contents and artistic expressions is currently under discussion. In the WTO, discussions on the CBD-TRIPS relationship and the disclosure requirement continue. The African Group proposed the creation of a Committee on Traditional Knowledge.

The book highlights important work on TK that has been initiated throughout the world. However, these activities have not yet yielded results fully acceptable to all, particularly to the custodians of TK. There is still much work to be done, both at the national and international levels.

At the national level, very few countries have in place full-fledged TK systems comprising legislation, policies and institutions. Across countries, there is considerable variation regarding TK, including the types of TK, how it is held and passed on, legal systems, main concerns, aspirations, and so forth. Therefore, a "one size fits all" approach is generally not appropriate. Priority TK-related objectives need to be identified through national multi-stakeholder dialogues among the concerned government ministries (environment, trade, culture, intellectual property, agriculture, etc.) as well as with TK-holding communities and relevant civil society actors. Such dialogue should ultimately aim at developing a common national vision, strategy and action plan.

Decision makers would benefit from a broad menu of options to draw on when developing national TK systems tailored to their specific circumstances. Analysis is needed on matching the different TK-related objectives with appropriate tools. Measures and tools for preserving, protecting, promoting and using TK at the local, national and regional levels need to be further developed, analysed, and tested on the ground. Experiences with implementation of these measures need to be gained and widely shared.

At the international level, developing countries have stressed in several forums the need for an international TK protection framework. Proposals for defensive TK protection have been made in the WTO and elsewhere, but with limited impact on the ground to date. For positive protection, it is not yet fully clear how such a framework should be constructed and function. An

international framework for recognition of national *sui generis* TK systems, as proposed in the Communiqué of the joint UNCTAD-Government of India seminar held in New Delhi and covered in Appendix V, is an idea worthy of further exploration. There is an urgent need to explore different international options from the development perspective.

As a think tank for development and a forum for sharing experiences and building consensus, UNCTAD can play a useful role in enhancing understanding of these issues. In February 2004, UNCTAD and the Commonwealth Secretariat jointly convened a Workshop on Elements of National *Sui Generis* Systems for the Preservation, Protection and Promotion of TK and Options for an International Framework<sup>4</sup>. In June 2004 at the UNCTAD XI Conference in São Paulo, Brazil, UNCTAD's mandate on TK from the UNCTAD X Bangkok Plan of Action was reaffirmed<sup>5</sup>. TK is also relevant to other UNCTAD XI mandates, including development benchmarks and trade sector reviews, and the Conference's three cross-cutting issues: trade and creative industries, trade and gender, and trade and poverty.

Moreover, "harnessing TK and biodiversity for development and trade" is being considered as a possible topic for the UNCTAD Trade and Environment Review annual series. The format of this publication comprises one to three lead articles plus short commentaries from a range of diverse stakeholders.

As UNCTAD continues its work on TK, information will be made available on UNCTAD's web site at [www.unctad.org/trade\\_env](http://www.unctad.org/trade_env).

We wish you good reading.

## Notes

- <sup>1</sup> In this book the term *traditional knowledge* (TK) is used to refer to "the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles" as well as "indigenous and traditional technologies" (Convention on Biological Diversity, Articles 8(j) and 18.4).
- <sup>2</sup> Bangkok Plan of Action, paragraph 147, TD/386, February 2000.
- <sup>3</sup> These guidelines for the submission of papers by experts are contained in Appendix I.
- <sup>4</sup> The papers prepared for this meeting and the workshop report are available on the UNCTAD Website ([www.unctad.org/trade\\_env/TK2.htm](http://www.unctad.org/trade_env/TK2.htm)), and are being compiled for a joint UNCTAD-Commonwealth Secretariat publication.
- <sup>5</sup> See for example paragraphs 73, 88, 101, and 103 of the São Paulo Consensus (TD/410, 25 June 2004).

# **PART ONE**

THE ROLE OF

TRADITIONAL KNOWLEDGE IN

HEALTHCARE AND AGRICULTURE



# TRADITIONAL MEDICINE: ITS IMPORTANCE AND PROTECTION

Xiaorui Zhang

## Introduction

Many products based on traditional knowledge (TK) are important sources of income, food and health care for large parts of the populations of a number of developing countries. Traditional medicine plays an important role in health care in both developed and developing countries. In fact, due to their availability and affordability, the traditional medicines and therapy systems of the developing countries provide health care to the vast majority of these countries' residents. Consequently, there is an urgent need to protect the intellectual property of traditional medicine systems. The available instruments – the patenting system and the arrangements for guarding trade secrets – are inadequate for this task, and new arrangements need to be formulated. This paper poses some key questions that need to be addressed in order to develop an acceptable solution to the problems of (i) protecting intellectual property rights (IPR), and (ii) sharing the economic benefits derived from the use of traditional medical knowledge (TMK).

## The important role of traditional medicine in human health care

The twentieth century witnessed a revolution in human health care. The dramatic decline in mortality, the increase in life expectancy and the eradication of smallpox are highlights of this success. Scientific innovation, leading to the development of new medicines, has played a major role in this achievement.

However, despite these successes, it is estimated that over one-third of the world's population lacks regular access to affordable essential drugs. In other words, modern medicine is unlikely to be a realistic treatment option for a substantial proportion of the world's population. In contrast, traditional medicine is widely available even in remote areas. Due to its local availability and low cost, it is affordable by the vast majority of people living in developing countries. In India, for example, according to the Government, 70 per cent of the population uses traditional Indian medicine.

In Africa the resolution on "Promoting the Role of Traditional Medicine in Health Systems: A Strategy for the African Region", adopted by the fiftieth meeting of the World Health Organization's (WHO's) Regional Committee for Africa in August 2000, states that the African Member States are aware that about 80 per cent of the region's population depends on traditional medicine for its health care needs.

In the last decade, there has been a global surge in the use of complementary and alternative medicine in both developed and developing countries. According to various government and non-government reports from the countries in question, the percentages of the respective populations having used complementary and alternative medicine at least once are as follows: the– Germany – 90 per cent, France – 49 per cent, Canada – 70 per cent, Australia – 48 per cent, the United States – 42 per cent, and Belgium – 31 per cent. Various reasons have been proposed for this increase, including the affordability of the treatments as well as changing needs and beliefs.

The most widely used traditional medicine and complementary and alternative therapies are herbal medicines and acupuncture. Today traditional medicine and complementary and alternative medicine play an increasingly important role in the reform of the health sector of many countries. In 2000 the Secretariat of the Convention on Biological Diversity reported that the world market for herbal medicines, including herbal products and raw materials, was US\$60 billion.



## Challenges involved in protecting knowledge of traditional medicine

The efficacy of certain types of traditional medicine, such as acupuncture and herbal medicine, has been widely investigated and written about. For example, *Artemisia annua* has since ancient times been one of the Chinese traditional medicines for the management of malaria. Artemisinin and its derivatives have been developed recently by modern scientific research and are among the most valuable anti-malaria drugs. St. John's-wort, used for treatment of mild to moderate depression, is another example. Such findings have stimulated further research to create new drugs based on traditional medicines.

In designing protection mechanisms for TMK, three important issues need to be addressed:

- i) How should the benefits derived from the use of traditional medicine be shared?
- ii) How can the intellectual property rights (IPR) of the holders of TMK and scientific researchers be protected when the TMK of the former is used by the latter to create modern drugs? (In most cases knowledge of traditional medicine originates in developing countries and is appropriated, adapted, utilized and patented by scientists and industry from developed countries, with little or no compensation to the custodians of this knowledge and without their prior informed consent. In recent years, the protection of TK, the innovations and practices of indigenous and traditional medicine and the equitable sharing of benefits have received increasing attention, and they are being discussed in many international forums).
- iii) How can we stop the loss of biodiversity caused by the widespread use of traditional medicine and the rapidly expanding international market for herbal products? The production of herbal pharmaceuticals requires large quantities of medicinal plants, which has resulted in over collection of many plants and has made them endangered species. For example, a particular species of African potato that in 1997 was found to combat AIDS disappeared completely from its native land, the Democratic Republic of the Congo, within two years of this finding.

## The gaps between traditional medicine areas and existing modern Patent Law

At present, both the protection provided under international standards for patent law and most national patent laws are inadequate to protect TK and biodiversity. For example, traditional skills in manual and spiritual therapies are different from those in modern practice, and there is no record of who invented them. Similarly, other traditional non-medicinal therapies are very difficult to protect using current standards of patent protection.

While existing conventional patent law can and does protect pharmaceutical products, herbal medicines and herbal products are different from chemical drugs. The intellectual property standards established by the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement) allow innovation to be protected by patenting the discovery of new chemical components, as well as innovative know-how in producing products, and by recognizing trademarks and trade secrets. However, this approach is difficult to apply to herbal medicines, which, because of their intrinsic characteristics, frequently do not meet all the requirements of patentability. Following are some reasons why herbal products and medicines do not get proper IPR or patent protection:

- Herbal medicines are crude plant materials, such as leaves, flowers, fruits, seeds, stems, wood, bark, roots, rhizomes or other plant parts, that may be used whole or in fragmented or powdered form. It is, therefore, often not possible to seek existing patent law protection for herbal medicines by claiming the discovery of new chemical entities or development of an inventive step.
- Herbal products are powdered herbal materials, extracts, tinctures, or fatty oils of herbal materials prepared by steeping or heating herbal materials in alcohol and/or honey, or in other liquids. The production process is usually simple and does not involve any sophisticated know-how or invention novel enough to secure protection under existing patent laws.



- Except for pharmaceutical companies and industries, holders of TMK, such as research institutes and practitioners, often do not have the financial and human resources needed to obtain protection through trademarks.
- It is extremely difficult, if not impossible, to keep such knowledge secret because disclosure of the composition of a product is a prerequisite for registration of herbal medicines before the product can be sold as a drug.
- In most countries, it is very expensive to acquire, exercise, and enforce patent rights, particularly if international protection is required. For traditional practitioners and research institutions, particularly in poorer countries, the cost is prohibitive.

### Future cooperation

While recent years have seen increasing attention given to the issue of protecting the TK, innovations, and practices of indigenous and local communities, various international forums need to focus on identifying systems that can be used to protect traditional medicine and the sustainable development of indigenous and local communities. A number of key concerns need to be addressed, such as: (i) how can existing systems be strengthened? (ii) how can national policies formulated to address the underlying concerns be supported multilaterally? (iii) how can developing countries obtain greater benefits from the commercialization of traditional medicines and products derived from them? And (iv) what should be the role of particular intellectual property regimes?

In the twenty-first century, traditional medicine will continue to play an important role in health care in both developed and developing countries. Biodiversity of natural resources, from which medicinal plants and herbal products are derived, has great potential for generating economic benefits. To help advance the debate on key issues, the WHO organized an Interregional Workshop on Intellectual Property Rights in the Context of Traditional Medicine in Bangkok, Thailand, in December 2000. This workshop discussed, among other issues, means of protecting TMK. It stressed the important role of traditional medicine in developing countries and reiterated that countries should develop a national traditional medicine policy that included the issue of research and development in the area of traditional medicine, the formal recognition of traditional medicine systems, and the integration of traditional medicine into the national health care system. At the meeting it was noted that many activities and products based on TMK are important sources of income and health care benefits, as well as environmentally sustainable routes to economic development for large parts of the population in many developing countries. The use of traditional medicine and the vast majority of plant genetic resources and other forms of biodiversity are found in, or originate in, developing countries. Access to these resources and the associated TMK can provide substantial benefits to companies and scientific research centres in both developing and developed countries. It was noted with concern that at times TMK is appropriated, adapted, and patented by scientists and industry, for the most part from developed countries, with little or no compensation to the custodians of this knowledge and without their prior informed consent. This was recognized by the meeting as a trade issue, as TMK and products derived from it often cross international borders, and it was concluded that developing countries should jointly voice their concern regarding fair and equitable sharing of benefits.

### Conclusion

The protection of TMK under IPR raises two types of issues. On the one hand, an important question is the extent to which TMK can be protected under existing IPR or new modalities thereof. There have been many proposals to develop *sui generis* systems of protection. Such proposals are often based on considerations of equity: If innovations in the formal system of innovation receive compensation through IPR, holders of TMK should be treated similarly.

On the other hand, the appropriation of such knowledge and/or the related biological materials under IPR by unauthorized parties has raised significant concerns, particularly in developing countries where there is a long and significant tradition of using traditional medicine.

The main reasons that have been suggested for the protection of TMK, including equity, are the preservation of knowledge against erosion, the prevention of misappropriation, and the

promotion of self-determination. Since IPR are not an end in themselves, the establishment of IPR should be considered a means of effectively reaching well-defined goals. Other forms of IPR regarding the protection of TMK – such as trade secrets, trademarks, geographical indications and policy options (e.g. developing a *sui generis* regime, curbing “bio-piracy”, benefits-sharing) should also be taken into consideration by national authorities.

In 2003, WHO Executive Board Resolution EB111.R12 on traditional medicine urged member States to take measures to protect and preserve TMK and medicinal plant resources for sustainable development of traditional medicine, including the IPR of traditional medicine practitioners, as provided for under national legislation consistent with international obligations. The WHO will support member States in recording and preserving TMK and in developing a national inventory of medicinal plants to ensure that knowledge is correctly and continuously used on behalf of generations. The information generated in these inventories should be shared with national patent offices to ensure that the data will be considered during the processing of patent applications.

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# THE USE AND COMMERCIALIZATION OF GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE IN VIETNAM: THE CASE OF CROP AND MEDICINAL PLANTS

Le Quy An

## Introduction

With its diverse climate, fertile plains, forests, mountains and ecosystems, Vietnam is endowed with rich and unique biodiversity. The country includes 275 species of mammals, 800 species of birds, 180 species of reptiles, 80 species of amphibians, 2,500 species of fish, and 5,500 species of insects. It is home to 12,000 plant species, of which 7,000 have been identified; 40 per cent of these plants may be endemic.

The country is ranked sixteenth in the world in terms of biological diversity. New species continue to be discovered and identified. Thus, three new mammal species were discovered between 1992 and 1994 and another mammal species was identified in 1997. Recently seven new plant species were discovered in Halong Bay, a World Heritage Site, as was reported by The World Conservation Union (IUCN). All these new plant species are endemic to Halong Bay and are not found anywhere else in the world. However, many species are facing extinction in the country, with over 300 animals and 350 plants listed as endangered species in Vietnam's Red Book of Endangered Animals.

The economy of Vietnam depends largely on its natural resources. Agriculture still contributes a significant amount to the gross domestic product compared to other countries in the region (Table 1). Biological resources play a very important role in agriculture, forestry, and fisheries for ensuring the food security of the nation.

**Table 1: Distribution of GDP among sectors, 1998 (%)**

Country	Agriculture	Industry	Services
Vietnam	25.8	32.5	41.7
Indonesia	18.8	45.7	35.5
Philippines	16.9	31.5	51.6
Thailand	14.2	37.5	48.3
Singapore	0.1	35.3	64.6

Traditional crops and new hybrids are helping to increase food production, the gross output of which reached 33.8 million tons in 1999, while domestic consumption requires only 21 million tons. For health care the Vietnamese people have been using over 3,000 medicinal plants and thousands of prescriptions derived from them.

This paper focuses on plant genetic resources and reviews the use and commercialization of traditional knowledge (TK).

## The case of crop plants and varieties and traditional knowledge

Most of the agricultural crops of Vietnam have been domesticated for a long time, yet some crop varieties are still found growing in the wild. The use of traditional plant varieties and the adaptation of introduced varieties rely on scientific developments as well as on the knowledge of the people.

The Kinh people, who constitute 85 per cent of the total population, are distributed all over the country and are involved in developing and maintaining rich agricultural diversity largely based on wet rice farming. In addition, some 54 ethnic minorities, living mostly in mountainous areas, are also known as the primary creators and custodians of agricultural biodiversity. A Tay farmer in Son La province identified more than a half-dozen wild yams in the forest and explained the specific manner for using each one of them while maintaining that there were many more wild varieties in the forest. Thousands of plant species are utilized for food, medicine, fodder, fiber, and raw material.

The conservation, use, development, and commercialization of plant varieties depend on research and development activity; the productive practices of farmers; and traditional knowledge (TK), which is commonly used and partly commercialized.

Scientific research institutions, universities, and technical colleges play a leading role in cooperating with local communities to collect crop germplasm and adapt new and introduced varieties and hybrids. In the period 1983–1991, the Science and Technology Institute of Agriculture collected 5,516 samples of crop varieties and wild plants related to 70 different species. As a result of a three-year effort, Can Tho University achieved more than 800 accessions that increased the total rice accessions in Vietnam to 1,800. Under the framework of the Community Plant Genetic Resources project, Can Tho University was involved in the distribution of traditional rice cultivars to 125 farmers in four provinces. They were trained in seed conservation, selection methods, and field documentation. In addition, 517 rice accessions were distributed to these farmers.

The plant materials that include pure line selection from populations were initially characterized and evaluated at Can Tho University. These were then distributed to the farmers for trials and observation. The materials given to the farmers were sorted according to the ecosystems where the seeds had to be grown. For example, 129 accessions were planted in the Can Giuoc District of Long An Province. Because of salinity-related problems and rainfall patterns in this district, the farmers accepted only short-term-maturing traditional cultivars. On the other hand, selected farmers in the Tan Tru District of Long An Province managed 136 medium-term accessions based on the physical conditions prevailing in the district.

The farmers evaluated the cultivars distributed to them and used them either for further trials or, in some cases, for seed multiplication. The farmers managed field documentation themselves. Can Tho University provided them with simplified and shortened descriptions of the cultivars.

Future studies under the project will include research on indigenous knowledge systems. This research will focus on conserving and strengthening farmers' experiences, traditions, and knowledge in conservation and development of plant genetic resources. It will include documentation of farmers' experiences in seed selection, storage, cultivation practices, preparation of planting material, insect and disease control, biodiversity, and analysis of the scientific approach used in indigenous knowledge systems.

These examples clearly demonstrate a need for a partnership between science and technology (S&T) institutions/universities and farmers. In these institutions, studies are carried out in close cooperation with local communities as experimentors, evaluators, and potential users for the development of new varieties or hybrids as well as the introduction and adaptation of these varieties. S&T institutions and universities often benefit from the indigenous knowledge of local traditional communities in the area of conservation and utilization of plant genetic resources without in any way compensating these communities. Such partnerships are needed for improving and developing TK on a scientific basis.

Some S&T institutions continue to produce and supply plant seeds though the formal seed supply systems developed and maintained by plant seed companies. A few regulations exist for sharing benefits among various stakeholders, but these benefits go more to the plant breeders than to the local communities that own the TK.

The use and commercialization of TK are based on two principles:

- TK is common knowledge and is in use at all times. As indigenous and local knowledge has always been developed incrementally and collectively, it is often difficult to identify a

particular person or group of persons as the inventor(s) of, for example, a plant-based traditional cure or of a useful crop variety. At the same time, local communities are in many cases the ultimate protectors and nurturers of biodiversity.

- Multiplication and seed production are a result of the farmer's need for use and exchange of seeds. Farmers have the implicit right to save seeds of new varieties for subsequent reproduction or for exchange with other farmers without payment to plant breeders.

Valuable TK about plant genetic resources, together with landraces, is disappearing at an alarming rate with the destruction of habitats and the increasing use of new hybrids. This reveals the shortcomings in national policy and regulatory mechanisms, which damage both biodiversity and TK.

## **The use of medicinal plants and traditional knowledge for health care**

### ***Overview***

Most of the medicinal plants in use are described in the book *Medicinal Plants and Medicinal Ingredients of Vietnam* by Dr. Do Tat Loi, which describes the biological and therapeutic characteristics of more than 800 plant species. The use of TK together with consultations with traditional Eastern physicians and herbalists has permitted him to introduce hundreds of prescriptions for treating many diseases.

Especially in rural areas, many medicinal plants are grown in family gardens and used daily by the people. Other medicinal plants have been domesticated and are widely grown for large-scale production – for example, *Eleutherine subaphylla*, *Leonurus heterophyllus* and *Andrographis paniculata*. The amount of the annual harvested material of some medicinal plants can be very high and can range from few tons to several hundred tons (e.g. *Polygonum multiflorum* 28 tons, *Ligusticum wallichii* 37 tons, *Angelica dahurica* 157 tons and *Coix lacryma-jobi* 178 tons).

Many plants are used in curing common diseases such as fever, cough, diarrhoea and influenza. Sometimes the combination of traditional and modern medicines is very helpful in treating serious diseases: for example, *Artemisia annua* can be used to treat malaria and *Catharianthus roseus* for treating blood cancer. Such applications are usually developed by S&T institutes. Pharmaceutical enterprises also develop such applications, but their medicinal products are registered under their own trademark.

Concerning medicinal plants and traditional therapeutic methods, in many cases specific application details remain a secret. Only a few people hold the information and knowledge about specific plants.

In most cases, since traditional medical prescriptions usually contain a large number of ingredients and can vary according to the condition of the patient, one plant can be used in different prescriptions with various doses in combination with other plants. There are thus many prescriptions known and handed down from generation to generation as family secrets. Such “no-patent-needed” informal but recognized knowledge helps its owner to get income; as a result, the owner is not willing either to register or to apply for a patent, because he or she is afraid that other people might come to know the secret.

### ***Vietnam's national health care policy***

President Ho Chi Minh, in a letter<sup>1</sup> to the national conference of medical workers, wrote: “Medical workers should help the people and the government of Vietnam to build a health care system for meeting people's needs. Health care should be built on a scientific, national and popular basis. In order to broaden the scope and the scale of health care, you should pay attention to study and combine oriental and western medicines”. National policy on health care was developed later as a result of the above directive. It specifically states that:

- It is necessary for developing Vietnamese medicine for prevention and to combine modern and traditional medicines.<sup>2</sup>



- Developing the public and private health sectors, realizing that health insurance will create better opportunities for all people to access important health care services.<sup>3</sup>

### **Major measures**

Major measures that have been taken to implement the national medicine policy include:

- Raising awareness of the value and role of traditional medicine.
- Emphasizing the study of traditional medicine and the need to combine traditional and modern medicines.
- Building, strengthening and developing all organizations, such as specialized hospitals and the Association of Traditional Medicine, that are involved in building the traditional medicine network.
- Making full use of capable traditional physicians and herbalists in mountain areas and of people's experiences, especially those handed down from ancestors.
- Organizing courses for increasing and refreshing the knowledge of health workers practicing traditional medicine.
- Setting up institutional frameworks for managing and promoting traditional medicine.
- Establishing the Department of Traditional Medicine within the Ministry of Health.
- Setting up five institutes for conducting research and practicing traditional medicine; 42 provincial traditional medicine hospitals; 265 traditional medicine departments in modern clinics; and traditional medicine departments in medical universities.<sup>4</sup>

### **Some results**

- The Ministry of Health has licensed 1,047 traditional medicines produced by both the public and private sectors to be circulated in the market.
- Pharmaceutical companies are providing hospitals with pharmaceutical herbs (about 20,000 tons per year) for the production of traditional medicines (500–1,000 tons per year).
- Besides state-owned enterprises, there are about 1,000 private traditional medicine enterprises and pharmacies.
- In 1999 about 8,000 private and collective traditional medicine facilities provided diagnosis and treatment and produced traditional medicines.
- Every year about 30 per cent of patients receive diagnosis and treatment by the traditional system of medicine.

### **Legislative instruments on genetic resources and TK**

There are still very few legislative instruments on the management and use of genetic resources and almost none for the protection of TK.

Government Decree No. 7-CP of February 1996 on seed varieties for raising productivity, and on the rate of multiplication of seed varieties, gives the following details:

- The overall policy of the Government is to invest for building national capacity in conserving, selecting, producing and carrying on the business of developing seed varieties (Art.4).
- Plant genetic resources are to be considered as national property and managed by the State. All organizations and individuals are encouraged to prospect for, collect, preserve, utilize, and enrich genetic resources for the benefit of the national economy and social welfare (Art. 8). The Ministry of Agriculture and Rural Development (MARD) is the main government body responsible for the management of development of seed varieties by the State.
- The State encourages and protects the legal rights of all Vietnamese and foreign organizations and individuals in their scientific research and business activities (Art. 3) and facilitates international cooperation (Art.13) on seeds and plants breeds. Such activities must nevertheless be licensed and put under the control of MARD (Art.14) and must strictly follow the stipulated technical process (Art.11).

- It is stated that newly produced, selected or imported seed varieties are subject to tests or pilot production before recognition and wider use (Art. 9).
- Seed varieties, when sold as goods in the market, should be sold under trademark with a certificate of quality. All illegal and unfair dealings in the production of and trade in seed varieties are forbidden (Art.13).
- Plant breeders own the copyright on new seed varieties (Art.10).

Decree No. 7-CP provides a legal framework for seed varieties management but does not protect TK or ensure equitable sharing of benefits derived from its use.

### Vietnam and international action

There is a need in the country to understand the contents of the Convention on Biological Diversity (CBD) and Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and to elaborate a national legal framework for this. The CBD obliges members to take various steps to conserve biodiversity within their jurisdictions, emphasizing in situ conservation and the role of traditional lifestyles and local communities (Art. 8j). While the CBD establishes the principle of fair and equitable sharing of benefits derived from the use of genetic resources, specific measures to facilitate benefit sharing are expected to be formulated at the national level as stated in Article15.<sup>5</sup>

The TRIPS Agreement extends the international trade regime to intellectual property rights (IPR) and obliges WTO members to provide at least a specific level of protection to all the generally recognized forms of IPR. Its provisions seek to globalize the dominant patent paradigm of developed countries at the expense of developing countries, because these provisions guarantee ownership rights to products made in the laboratories of developed countries using the knowledge of indigenous peoples and local communities. Thus only the industrial model of innovations is recognized, while the cumulative collective system of innovation of traditional communities is excluded by definition in the provisions of TRIPS.

In 1978, the International Convention for the Protection of New Varieties of Plants (UPOV Convention) covered only commercial marketing or selling of material for propagating protected varieties. Farmer thus had the “privilege” of using seeds derived from a first crop to plant a second crop without paying for plant breeders’ rights (PBR) a second time. But the amended 1991 UPOV Convention theoretically abolished this privilege by extending PBR to all uses, although it does allow member States to limit PBR in their national legislation. The amended Convention also forbids the use of a protected variety to create a new variety if the newly created varieties contain virtually all of the original variety’s genes.

**Table 2: Patenting in TRIPs: compulsory and optional exclusion**

Compulsory Exclusion	Optional Exclusion
<ul style="list-style-type: none"> <li>- Inventions that are not new, do not involve an inventive step, or are incapable of industrial application.</li> <li>- failure to disclose the invention in a manner clear and complete enough to enable it to be implemented by a person skilled in the art.</li> </ul>	<ul style="list-style-type: none"> <li>- Diagnostic, therapeutic and surgical methods for the treatment of humans or animals.</li> <li>- Inventions the prevention of the commercial exploitation of which is necessary to protect public order or morality.</li> <li>- Animals and plants (including plant varieties).</li> <li>- Essentially biological processes for the production of plants or animals.</li> <li>- Failure to provide information concerning corresponding foreign applications and grants.</li> </ul>

Source: Dutfield (2000).

The workshop on TK and biological diversity held in Madrid in November 1997 highlighted the need to clarify the relationship between the TRIPS Agreement and environmental conventions dealing with compensation to or benefit sharing with local communities involved in biodiversity conservation.

Being aware of the conflicts between the CBD and the TRIPS Agreement, specialists from many countries, especially developing countries, have been carrying out studies in preparation for bridging the gaps between the CBD and TRIPS. A feasible mechanism for the countries may be to incorporate all the exclusions allowed by TRIPS in their national patent laws (Table 2).

There are also other proposals in defense of biodiversity and TK. Nijhar has formulated a new definition of “innovations” to include “derivatives which utilize the knowledge of indigenous peoples and local communities in the commercialization of any product as well as to a more sophisticated process for extracting, isolating, or synthesizing the active chemical in the biological extracts or composition used by the indigenous peoples”.

The community should be declared the “owner” of knowledge. It should collectively exercise complete control over the knowledge and hold it in trust for its members as well as for future generations. The community, therefore, holds these rights as a custodian or steward in perpetuity. No use should be made of the knowledge save with the consent of the community. Users should pay for any use of that knowledge.

In Vietnam, MARD is drafting legislation for the protection of new plant varieties. Since the draft regulation has not yet been examined and approved, there is no formal interpretation of its contents. However, through workshops and discussions during the process of its elaboration, it might have made an attempt to reconcile the conflict between the CBD and TRIPS – for example, by recognizing the rights of the patent holder and at the same time denying patents in certain cases, such as (a) personal and non-commercial use of seed varieties; (b) using the product of the harvest obtained by planting the protected variety for propagating purposes on one’s own holdings; and (c) using the protected material to develop new varieties and for scientific purposes. However, genetic resources differ according to their uses, and TK is often associated with particular genetic resources.

While there are conflicts between the CBD and the TRIPS Agreement, existing international legal instruments provide fundamental principles on which national regulatory frameworks can be based.

Vietnam can benefit from the experiences of other countries:

- In the Philippines, a President’s Executive Order (PEO) was issued in 1995 for regulating biodiversity prospecting, which is defined as “the research, collection and analysis of biological and genetic resources for purposes of applying the knowledge derived therefrom to scientific and/or commercial purposes”. The PEO requires that all biodiversity prospecting be subject to the prior informed consent of local and indigenous communities.
- In Costa Rica, the Legislative Assembly in 1998 passed the Biodiversity Law, which to date is considered the most ambitious and elaborate national law for implementing the CBD. The overall objective of the Law is to conserve biodiversity, utilize resources sustainably and distribute fairly the costs and benefits derived from biodiversity. It covers a full range of issues, including the protection of scientific and traditional biodiversity-related knowledge through IPR and/or sui generis systems.

Vietnam has to take advantage of the grace period allowed by TRIPS to devise appropriate IPR laws taking into account its national interests.

## **Annex I - List of main scientific research institutes related to genetic resources and plant varieties**

Institute of Biotechnology

Institute of Oceanography



Institutes of Ecology and Biological Resources

Institute of Materia Medica

Food Crops Research Institute

National Institute of Animal Husbandry

Vietnam Agricultural Science Institute

Forest Science Institute of Vietnam

Institute of Agricultural Science of South Vietnam

Cuu Long Delta Rice Research Institute

Rubber Research Institute

Tea Research Institute

Research Institute of Marine Products

Maize Research Institute

Honey Bee Research Center

National Institute for Soil and Fertilizers

Research Institute of Vegetable and Fruit

Institute of Veterinary Medicine

Institute of Agricultural Genetics

## References

Dutfield G (2000). Intellectual property rights, trade and biodiversity. London, Earthscan Publications Ltd.

## Notes

<sup>1</sup> Dated 27-2-1952

<sup>2</sup> The 1980 Constitution of the Socialist Republic of Vietnam: Chapter III, Article 44

<sup>3</sup> The 1992 Constitution of the Socialist Republic of Vietnam: Chapter III, Article 39

<sup>4</sup> There are currently 22 Professors and Assistants Professors, 1,384 Physicians and 1,678 Assistant Physicians in traditional medicine.

<sup>5</sup> For details refer to the Secretariat of the Convention of Biological Diversity statement in this book.



# TRADITIONAL MEDICINE IN BURKINA FASO

Zéphirin Dakuyo

## Introduction

Burkina Faso is a Sahelian country in the heart of West Africa. In recent years, it has developed a policy to promote traditional medicine. The increasing costs of imported pharmaceutical products coupled with the low purchasing power of the population have since 1985 led the Ministry of Health to implement a strategy to improve the image of traditional medicine so that this system of health care begins to be used as an option at the level of medical units. This paper describes how the ministry has instituted a medical care system based on traditional knowledge (TK).

## Government Initiatives

The Ministry of Health has created a Department of Pharmaceutical Services and Traditional Pharmacopoeia. The main goal of this department, under the direction of a pharmacist, is to establish a policy for developing a traditional medicine pharmacopoeia throughout the country.

The first decision by the Department was to set up units to spearhead the development of traditional pharmacopoeia at the regional level. The units meet regularly to exchange experiences gained in the field. Some organizations of traditional therapists and herbalists have also been set up in Ouagadougou, Bobo-Dioulasso, and a few other cities in Burkina Faso.

Regulations to control the practice of traditional medicine in Burkina Faso have been drawn up by a group of specialists including legal experts, traditional therapists, pharmacists, and doctors. This group includes representatives from other ministries such as Environment, Information and the Civil Service.

The AIDS epidemic has not spared Burkina Faso. All available means of combatting this scourge have been implemented, notably the option of traditional pharmacopoeia, in view of the excessive cost of anti-retrovirus drugs at present. To show its will to enlist all the parties involved in health care, notably the traditional therapists, in the fight against AIDS/HIV, the Government of Burkina Faso has established three phytotherapeutic units to care for HIV patients. These units are located in Ouagadougou, Bobo-Dioulasso, and Banfora. In these centres, patients receive plant-based medication that has shown some success when administered by traditional therapists to their own patients. Doctors and traditional therapists care for the patients at the centres.

## The Banfora Centre of Traditional Pharmacopoeia

The Banfora Centre of Traditional Pharmacopoeia in southwestern Burkina Faso has been set up to promote the use of traditional pharmacopoeia. It has been entrusted with the tasks of taking a census of traditional therapists, collecting traditional remedies, improving some traditional formulas to make them available for everybody, and establishing real cooperation between traditional and modern medicine. The centre is divided into the following sections:

- *The Traditherapists Section:* This section deals with increasing public awareness, taking a census of the traditional therapists and collecting traditional formulas.
- *The Production Section:* In this section, remedies that have proven effective and harmless are improved and produced on a larger scale for consumers.
- *The Medical Consultations Section:* This section provides daily medical consultations by health-care professionals for the patients attending the centre. It is located within the hospital to facilitate the movement of patients between the modern and traditional health-care systems.

- *The Section for Collecting Medicinal Plants:* This section is responsible for cultivating or collecting from within the country raw material for preparing traditional remedies. Parts of the plants used include leaves, bark, and rhizomes.
- *The Section for Growing Medicinal Plants:* In order to protect nature, emphasis is placed on plants that are suitable for cultivation and can supply raw material. Therefore, a “healer’s grove” has been planted to grow native medicinal plants on a large scale.
- *The Botany Section:* With the support of the National Centre for Scientific and Technical Research (CNRST), a herbarium with 500 species of plants has been set up. A botanical garden has also been set up within the hospital.
- *The Laboratory Section:* This section controls the quality of the raw material and of the finished products.

At the scientific level, the centre works in cooperation with CNRST, the University of Ouagadougou, the Department of Medicine and Pharmacy of the University of Bamako (Mali) and the University of Poitiers and the University of Montpellier in France. There is a similar centre in the eastern part of the country, in the city of Fada N’Gourma, but at present this centre is not very active.

### **Phytofla Laboratories**

The goal of Phytofla Laboratories is to produce plant-based medications on a large scale. The production unit, located in Banfora (in the southwestern part of the country), currently produces about 20 plant-based products for the treatment of many diseases such as malaria, hepatitis, diabetes, diseases caused by parasites, diarrhoea, amoebic dysentery, and haemorrhoids. These products are distributed throughout the country through pharmacies and depots. Phytofla Laboratories, the Faculty of Medicine and the Faculty of Pharmacy of the University of Ouagadougou have established a shared protocol of scientific validation to control the effectiveness of the products.

The PAPME project to support small and medium-sized businesses supports Phytofla Laboratories in its work of growing the medicinal plants that are the raw material for the production of plant-based medicines; it also aims to preserve the most-needed and endangered plants.

### **Conclusion**

The authorities of Burkina Faso understand that if indigenous plants are to be used in health care for the population as a whole, the process must include sound scientific authentication and validation. The authorities are helping to develop traditional medicine as a necessary supplement to the existing medical care provided for all segments of society by the medical centres of the country. The experience of promoting traditional medicine in Burkina Faso has proven that TK has a very important part in the socio-economic development of the country. It is, therefore, imperative to preserve this knowledge carefully for present and future generations.

# **THE ROLE OF TRADITIONAL KNOWLEDGE IN THE NATIONAL ECONOMY: TRADITIONAL MEDICINE IN TANZANIA**

**Paulo P. Mhame**

Traditional health care practices existed in Tanzania long before colonization. Over the centuries, local people have developed a wide variety of indigenous technologies in harmony with nature. Conclusions about the medicinal properties of plants, animal extracts, and marine life were drawn on the basis of careful observations. With trial and error, a vast heritage of knowledge and expertise regarding the use and properties of these biological resources has been collected and preserved by different cultures and civilizations. Most of this indigenous knowledge was handed down through the ages by oral tradition. The practices that developed have had to meet the needs of the local communities.

Tanzania has a population of about 30 million people and an area of 939,400 square kilometers. It is endowed with a rich biodiversity comprising over 10,000 species of flora, fauna, and marine resources. Traditional medicine plays a role in primary health care in Tanzania and has great future potential. For over 60 per cent of the population seeking advice on health, the first point of contact is a traditional healer, the majority of whom practice in rural areas. Currently, there are an estimated 75,000 traditional health practitioners in the whole country; of these, about 2,000 live in towns. The traditional healers in towns earn their living solely from selling traditional remedies. With growing recognition of the role of traditional medicine in health care, the selling of traditional medicines within and outside the country is a growing area of endeavor. This has helped change the prevailing attitude towards the sale and use of indigenous remedies.

## **Traditional medicine and the national economy**

Tanzania's economy depends on agricultural exports of crops such as coffee, cotton, tea, sugar, tobacco, cashew nuts, pyrethrum, and cloves. Flora and fauna having medicinal value are not recognized as an important source of earnings for the national economy. With the increasingly market-driven economic policy encouraging the private sector, individuals and enterprises have established businesses relying on medicinal plants.

Herbal medicine is steadily gaining recognition, with world trade in medicinal plants and products derived from them now worth billions of dollars a year. Many European countries are showing a growing interest in complementary medicines based on herbs, thereby opening up opportunities for third-world countries.

The European market for herbal products is expanding because of the growing interest in complementary medicines and alternative health care solutions. In 1999 it was estimated that retail sales of alternative remedies worldwide totalled approximately \$20 billion. The share of African and Middle Eastern countries was only US\$19 million, about 0.97 per cent of the total world market.

With the free-market economy, exports of medicinal flora and fauna are growing fast. Various countries are becoming significant importers of Tanzanian medicinal flora and fauna. In the years 1997, 1998, and 1999 respectively, Tanzania exported 7,421, 5,771 and 7,005 metric tons of plants and animals worth Tanzanian Shillings 4.57 billion (US\$5.2 million), 5.65 billion (US\$6.4 million) and 6.83 billion (US\$7.7 million). The quantity and value of exports, especially of sea products, have increased considerably. In 1999 the country exported medicinal products comprising 31.63 per cent of the total Government drug expenditure (21.6 billion Shillings) for that year.

## Requirements and constraints involved in using traditional medicine

As a tropical country, Tanzania is rich in a wide variety of medicinal plants, fauna, and marine resources having curative properties. It needs to develop adequate facilities for research into and development of products using such resources, and an effective system for marketing the products that are available or become available in due course. Suitable control mechanisms are also needed to ensure that the underlying natural resources are used sustainably.

Medicinal plants can be used for sustainable economic gain but also to provide affordable health care for local people. Key constraints on developing health care that uses local medicinal plants include the following:

- Inadequate awareness
- Insufficient investment in research and development
- Inappropriate distribution chains

A lack of databases of comprehensive information on medicinal plants is a big obstacle to further development of traditional medicines.

To remedy this situation, several steps in policy planning and infrastructure and capacity development are required. At present these are in very early stages.

## Rules and regulations

In light of current international conventions and biotechnological management, including the intellectual property rights issue, Tanzania has had to review its biodiversity policies to ensure sustainable use of its biological resources. The policy covers flora, fauna, and marine resources.

The exploration and export of floral resources of potential medicinal value is currently regulated by various ministries and departments such as:

- The Department of Agriculture with cooperative societies,
- The Departments of Natural resources and Tourism, and
- The Departments of Trade and Industries, and Health.

Because of the various stakeholders involved in the conservation and utilization of biodiversity, the law does not say anything about specific plant species. For example, under the Ministry of Agriculture and Cooperative Societies, the Natural Agricultural Products Law of 1969 deals with the control of sales, transport, storage, processing and trading of agricultural resources. The Ministry of Tourism and Natural Resources deals with the conservation and management of forests and forest products focusing on forest reserves. There is no emphasis on establishing a unified policy among different ministries (e.g. the Ministry of Trade and Industries and the Ministry of Health), to guide the collection and export of medicinal resources.

Regulations governing the exploration, export, and conservation of fauna and marine resources are issued by the relevant departments of different ministries. Various regulations from different ministries exist, but there is no single regulation that spells out how to control and regulate the exploration, export, and conservation of *medicinal resources* derived from animal and marine life.

## Industrial property rights, policy and law

The protection of industrial property is concerned with patents, utility models, industrial designs, trademarks, service marks, trade names and indications of sources of origin. Tanzania believes that adequate protection of intellectual property is essential for the acquisition of the science and technology needed in order to expand industries based on biological resources. The current business and regulatory environment is not very supportive for local inventors, particularly in the field of traditional medicine.

The first patent protection law in Tanzania was the Patent Ordinance, Cap. 217 of 15 May 1931, which was later enacted by the Government of Tanzania as Patent Act No.1 of 1987. This Act was later reviewed to make it an effective instrument for the transfer and expansion of

science and technology. The revised Act included better provisions for the protection of copyright and neighboring rights involving literary and artistic creations and folklore. With respect to folk art and folklore, the Act protects:

- folk tales, folk poetry, and riddles
- folk songs and instrumental folk music
- folk dances, plays, and artistic forms of rituals
- folk art, in particular drawings, paintings, carvings, sculptures, pottery, terracotta, mosaics, woodwork, metal ware, jewelry, baskets, and costumes
- traditional musical instruments

The new Patent Act does not protect *traditional medicines and medicinal products* derived from the flora and fauna of the country. Traditional medicine and medicinal products, therefore, do not have legal protection. This omission needs to be remedied.

## Conclusions

Developing countries such as Tanzania view biodiversity as important for their survival. The indigenous communities in Tanzania depend on biological resources for their livelihood. The country believes that adequate protection of intellectual property rights (IPR) needs to be ensured before anyone can be allowed to carry out research and development based on local natural resources. Efforts are now being made to establish rules and regulations governing IPR, with particular emphasis on equitable sharing of benefits derived from the natural wealth of the country.

The world has recognized the role of traditional medicine in health care. Trade and business involving traditional medicine have grown very fast, making it into a multi-billion-dollar industry.

Tanzania is a tropical country with more than 10,000 plant species and a wide variety of fauna and marine resources. It can benefit from this biological resource base by developing a high-value industry from it. However, a concerted effort is needed to capture a larger share of the world market for traditional medicines. To obtain long-term results, this needs to be done in a sustainable manner together with a proper regulatory mechanism for the herbal medicine industry. Herbal medicines offer not only affordable health care but also economic gain to the country.





# **AIDS AND TRADITIONAL HEALTH CARE IN AFRICA: THE ROLE OF TRADITIONAL HEALERS IN PREVENTION STRATEGIES AND TREATMENT OPTIONS**

**Martin Shenton**

## **Introduction**

Southern and East-Central Africa, which are some of the poorest areas in the world, are also the most seriously affected by HIV/AIDS. In Zimbabwe, for example, more than a quarter of the adult population is infected with HIV, but the country has less than \$US40 available to treat each case (Wechsler 2000). Most developing countries cannot afford the new high-cost AIDS therapies that have proved successful in prolonging lives and treating AIDS-related illnesses in developed countries. The new therapies are difficult to administer and require accurate dispensing and uninterrupted treatment in order to avoid the development of drug-resistant viral strains (Wechsler 2000). HIV/AIDS treatment options and prevention strategies are very complex, and prevention efforts need to be embedded deeply in the cultural surroundings.<sup>2</sup> Incorporation of traditional remedies into appropriate prevention strategies and treatment options could be of considerable benefit to health care systems on the African continent.

## **HIV/AIDS in Africa**

While Africa has only 13 per cent of the world's population, over 50 per cent of the people infected with HIV live on this continent. Nowadays HIV/AIDS has become the primary cause of death in Africa (King 2000). The majority of new infections continue to be concentrated in eastern and southern Africa, while western Africa is generally less affected. According to a UNAIDS estimate of 1998, in Botswana, Namibia, Swaziland and Zimbabwe one person in five aged 15–49 are living with HIV or AIDS (UNAIDS 1998). There is, therefore, a critical need to look at innovative approaches for preventing HIV. Although HIV prevention strategies have been in place in various countries for some time, their effect on new infection rates has been insufficient.

Most preventive programmes so far have relied on giving accurate information about HIV transmission and prevention and imparting practical skills to enable people to reduce their risk of HIV infection. Little attention, however, has been given to the fact that people require environments enabling them to modify their behaviour. The importance of the sociocultural environment in HIV prevention has been underestimated, and this is an area where traditional healers can play an important role.

## **Traditional health care for HIV prevention and AIDS treatment**

Most of the local African traditional medicinal systems have always been based on pluralism. In addition to herbalists and midwives, numerous other traditional healers such as diviners and faith healers exist. Each of them has a special role in traditional medicine. Unlike western medicine, which claims to be able to explain every illness and offers successful therapies for most, almost no traditional healer would say he or she can treat, let alone cure, every illness. Illnesses in Africa have typically been seen as an interaction between a human being, his or her body, and the patient's cultural surroundings. The psychosocial aspects of diseases are considered to be as important as the physical ones. Treatments generally consist of curative, protective and preventive elements, can be either natural or ritual, and vary greatly according to the healer's own knowledge and skills (Pretorius 1993: 3).

### ***HIV prevention***

The traditional knowledge (TK) of local healers can play an important and active role in HIV prevention strategies, as these healers are usually an important source of information and advice for their community. Enlisting their help requires close working closely with professionals and through their training. A study conducted in Uganda shows that healers have only a general knowledge of HIV/AIDS and make little effort to reduce transmission (Panos 1996: 2). This one study does not convey the whole truth of the situation, as there are also reports of traditional healers willing to collaborate in HIV/AIDS prevention (Thompson 1999: 7). Traditional healers can fulfil numerous tasks such as stopping rituals that spread HIV (including harmful healing practices they themselves perform), raising awareness of HIV/AIDS, promoting the use of condoms, assessing levels of risk, suggesting behavioural changes, and even recognizing seropositive symptoms and providing patients with information about their health and their treatment options.

### ***AIDS treatment***

Traditional health care is the only health care system available to AIDS victims in Africa, as the promising new drugs are not only inaccessible but also expensive. In Malawi, for example, it is estimated that there is one healer for every 300 people, compared to the 50,000 people per doctor (Panos 1996: 1).

The role of traditional healers in the treatment of HIV/AIDS has been very controversial. Traditional medicine has proved of real benefit in the treatment of some symptoms related to AIDS, such as fever, skin rash and diarrhoea. However, some unsubstantiated claims by traditional healers that they have found a cure for AIDS have had a bad influence on the sexual behaviour of some members of the African population. This, helped by a broad media presence, has undermined the credibility of the traditional health-care systems in the countries concerned. But, while there is no evidence that a cure for AIDS has been developed, some traditional medicine may help to relieve symptoms of the disease. For example, a scientific investigation in Zimbabwe, where the government has threatened to prosecute all who falsely claim to be able to cure AIDS, showed that traditional medicine gave some relief against diarrhoea. A survey conducted in Uganda showed that traditional treatment of patients suffering from chronic diarrhoea and herpes was found to be as effective as, or slightly more effective than, conventional modern treatment (Panos 1996: 2).

## **Integration of traditional healers into health-care systems**

### ***Problems of integration of traditional health care***

There is a need to integrate traditional medicine into national health-care systems throughout the world. However, these efforts have been extremely slow and one-sided. Poor documentation, lack of standardization and quality, and the absence of regulatory mechanisms and monitoring for traditional health-care practices in many countries are the main obstacles to the inclusion of traditional medicine in the national health-care systems (Bodeker 2000: 1). Also traditional healers may engage in harmful practices or cause delays in referral to biomedical facilities (King 2000). It seems that traditional healers whose methods are based on the supernatural causes of illnesses (e.g. possession by spirits) are less integrated into national health-care systems than healers who base their methods on more tangible resources (e.g. herbalists).

The persistent conflicts between the fundamental values and beliefs of modern and traditional medicine are referred to in other papers in this book. In other words, while western medicine sees itself as objective, scientific, rational, and universalistic, it perceives traditional medicine as irrational, superstitious, and particular. In contrast, traditional healers say that they try to treat an illness with regard to the entire individual (recovery from bodily symptoms plus social and psychological reintegration), not only the disease itself (i.e. only the body and not the whole person).

### ***Actions that have been undertaken***

In recent years, task forces on traditional medicine and AIDS as well as various programmes for the education of traditional healers have been set up in different regions and countries of Africa. For instance:

- In Mozambique a proposal has been made to establish a foundation for collaboration between the National Health Service and traditional healers (Green 1991).
- In Uganda proposals have been made to train traditional healers as counsellors and educators on sexually transmitted infections (including HIV); to train them in basic clinical diagnosis, with the intention of supporting their efforts to provide quality health service; to establish and manage a resource and training centre to facilitate the collection and dissemination of information on traditional medicine; and to advocate traditional medicine among professionals and other scientists.
- Numerous programmes have been established in countries such as Botswana, Ghana, Kenya, South Africa, and Zimbabwe to reach people at the community level.

### ***Benefits of Integrating Traditional Medicine***

Some studies have shown that integrating traditional healers into the health-care system is beneficial because (i) traditional healers are enthusiastic to collaborate and willing to learn to perform a wide array of primary health-care tasks; (ii) involving them is a cost-effective way of providing health care to poor communities; and (iii) the health status of the affected communities improves (Thompson 1999). Traditional healers provide client-centred, personalized health care that is culturally appropriate, holistic and tailored to the needs and expectations of the patient, thus facilitating communication about diseases, especially sexually transmitted ones and related social issues (King 2000).

### **Conclusion**

There has been progress in integrating traditional healers into the health-care systems of some African countries, but much still needs to be done. Traditional medicine and its practitioners are an untapped resource at the grass-roots level and should be involved at all levels in education, planning, research, implementation, and policy-making with regard to HIV/AIDS-related matters in Africa. Research on traditional medicine and its institutionalization should be accompanied by standardized training for traditional health workers. Most importantly, the prevailing belief that western medicine is superior to traditional practices should be revised. There is a need for synergies between the two systems, synergies that, by combining the two complementary approaches, could lead to more creative and culturally sensitive approaches for HIV/AIDS treatment in Africa.

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# **USING FARMERS' TRADITIONAL KNOWLEDGE TO CONSERVE AND PROTECT BIODIVERSITY: THE ETHIOPIAN EXPERIENCE**

**Tesfahun Fenta**

## **Introduction**

Traditional knowledge (TK) is local knowledge that is unique to a culture and society. It is embedded in the community's practices, institutions, relationships and rituals. It is the total of the knowledge and skills that people in particular geographic areas possess and that enable them to get the most out of their natural environment.

The achievements of early Ethiopian civilization are evidence of the culture's traditional knowledge. The domestication of certain crops like coffee, teff, and enset and the development of the bench terrace system by the Konso community are examples of important agricultural achievements. The country has had a written language for over 2,000 years; manuscripts over 500 years old deal with TK concerning public health and veterinary medicine.

## **Ethiopia as a world centre of crop biodiversity and associated traditional knowledge**

For a century, rural development policies and strategies have assumed that farmers mismanage their natural environment (i.e. soil and water). Farmers have been advised and educated (via lectures, payments and coercion) to adopt new soil and water conservation measures and practices. Many have done so, and for some time the environment and the economy benefited. But many problems have undermined these efforts in the name of conservation, with financial and legal incentives bringing only short-term conservation that is not sustainable. Some projects in rural areas were successful because they integrated traditional knowledge and practices into every stage of their planning and implementation.

Ethiopia is a major world centre of genetic diversity for many important domesticated crop plant species such as sorghum, barley, teff chickpea, and coffee, which are largely represented in the country by uniquely adapted land races and wild types and genetically diverse forms. The genetic diversity of Ethiopian land races has been used worldwide to develop new crop varieties and to address acute constraints affecting yield. Much of this crop diversity is found in the small fields of peasants who, aided by nature, have played a central role in the creation, maintenance, and use of these invaluable resources.

In Ethiopia, traditional farming represents the centuries of accumulated experience and skills of peasants who often sustained yields under adverse farming conditions using locally available resources. Ethiopian farming has its foundation in traditional crops and land races that farmers have adapted over centuries on the basis of selection and use to meet changing needs. Ethiopian farmers are instrumental in conserving germplasm, since they control the bulk of the country's genetic resources. Peasant farmers retain some seed stock for security unless circumstances dictate otherwise. Even when forced to leave their farms temporarily by emergencies such as severe drought or other threats such as war, farmers have often kept small quantities of seed stocks.

In addition to household storage, farmers in various regions of the country have well-established systems to ensure the security of the seed supply, and they often operate in networks. One of the principal networks involves the exchange of seed in local markets. Farmers exchange crop types representing a wide range of adaptation to diverse environments. In this way, planting material can be chosen to suit a particular set of agro-climatic conditions. Seed that is not exchanged or consumed can be saved for a more appropriate planting season. In some of the more developed regions of Ethiopia, such as the central highlands, this practice is

becoming less and less common with the availability of new improved cultivars. In most of the drought-prone areas, particularly in the northern Shewa and Wello regions, farmers still depend largely on the above-mentioned traditional system for ensuring a sustained supply of adaptable planting material.

The broad range of genetic diversity existing in Ethiopia, particularly the primitive and wild gene pools, is presently subject to serious genetic erosion and irreversible losses. Recent droughts in the northern part of the country have directly or indirectly caused considerable genetic erosion, at times even resulting in massive destruction of animals and plants. The famine that has persisted in some parts of the country has forced farmers to eat their own seed in order to survive or sell seed as a food commodity. This has often resulted in massive displacement of native seed stock (mostly sorghum, wheat and maize) by exotic seeds provided by relief agencies in the form of food grain. To counter losses in genetic diversity, the former Plant Genetic Resources Centre of Ethiopia (PGRC/E), now the Institute of Biodiversity Conservation and Research (IBCR), in 1987–88 launched rescue operations, including a strategic seed reserve programme, in areas subject to recurring drought.

In the context of peasant farms, *in situ* conservation is defined as the maintenance of traditional cultivars (or land races) in surroundings to which they have adapted, or in the farming systems where they have acquired their distinctive characteristics. In view of this, land race evaluation and enhancement programmes will certainly be needed to promote more extensive use of germplasm resources that are already adapted to drought-prone regions of Ethiopia. In such extreme environments, locally adapted land races would provide suitable materials for institutional crop improvement programmes. There is, therefore, a need to maintain land races growing under natural conditions in a dynamic state. In Ethiopia, maintaining land races is probably best achieved through farm- or community-based conservation programmes.

### Seeds of survival programme

The work described above was undertaken (1989-1997) when PGRC/E received support from the Unitarian Service Committee in Canada (USC/Canada) to implement the Seeds of Survival programme in Ethiopia (SOS/E). The programme continued to represent a participatory, dynamic, farmer-based approach to land race conservation, enhancement and utilization. The activities of SOS/E are linked to the more formal off-farm conservation activities at the national gene bank (IBCR). The work was carried out on small-scale peasant farms in collaboration with farmers, scientists and local extension agents. The programme comprises two major types of farm-based conservation activities: conservation and enhancement of native seed stock (land race), and maintenance of a selection of indigenous land races (elite materials) in identified farms.

Following are the major features of these activities:

- Genetic resources conservation and enhancement activities involving farmers, scientists and local selected farms are undertaken at strategic sites in areas where the native seeds are still widely grown and where stresses such as recurrent drought, diseases and pest epidemics prevail.
- The project designed its conservation measures primarily to maintain *in situ* crop diversity by protecting major cultivars from disappearing, and to improve the genetic performance of the diverse land races. Targeted crops include sorghum, various pulses and locally adapted maize. Materials collected (or rescued) during the drought period are included in the programme. Land races are maintained on each peasant farm following the traditional practices of selection, production, storage and utilization. Field sites vary each season in conjunction with traditional crop protection patterns.
- The plot size and seed rates for each crop were determined by the farmers, depending on their needs, the availability of seed and labour, the method of seedling raising, and the soil type. In managing and maintaining the *in situ* plots according to farmer practice, the programme seek to optimize *in situ* conservation, based on the rationale that farmer practices provide a viable approach to long-term conservation.
- Identification and establishment of strategic *in situ* “pockets” over a network of locations is another major component of the project. This is limited to identifying strategic sites in



locations where the targeted land races are grown, spreading across a range of agro-ecological niches within the project area. In addition to IBCR activities, farmers collaborating in the project practice various forms of stratified and mass selection approaches and multiply their land races, mainly sorghum and local maize, separately for production. Seeds of selected plants are bulked to form a slightly improved population, which is included in plantings to increase seed supply and for continued selection. Appreciable improvements in crop yield have been observed among the selected materials that are produced following the traditional systems. The yields of sorghum land races and locally adapted maize that have been jointly selected by farmers and IBCR scientists have exceeded the yields of the original land race seeds, with no additional inputs. Farmer-selected types are expanding into other areas of the Shoa and Wello regions where droughts have caused frequent crop failures. To date, over 25,000 farmers have used the varieties, with the number of farmers using it increasing each year.

- Another aspect of the programme deals with restoring land races in regions where farmers once planted land races extensively, but that are now dominated by introduced or improved (high external input) varieties. In the region of Ada in Central Shoa, for example, the indigenous durum wheat has nearly disappeared because of displacement by introduced bread and durum wheat varieties. In this area, farmers (primarily women) have traditionally used the local durum wheat to make porridge, enjera, unleavened bread, and home-made beer, which they sell or exchange at local markets. Farmers rarely use bread wheat for household consumption; rather, they sell it as a commercial crop in urban areas.
- The project has been active in promoting the conservation, enhancement and use of indigenous durum wheat in Ada and other areas of Central Shoa. Elite durum wheat land races (composites of three or more genetic lines) are developed at the Debre Zeit Agricultural Research Centre and provided to the project. These composites are further selected and multiplied jointly with small-scale peasant farmers. Land race composites were developed from plant populations, through the process of selection, and based on performance in yield tests under different conditions of environmental stress. The genetic lines (agrotypes) are bulked for further selection, multiplication and distribution to farmers.
- Since the 1994–95 cropping season, the eight composites most preferred by the farmers have been under production at various locations on the 4,000 farms in the above-mentioned regions. Farmers' demand for land race seeds has been escalating at an impressive rate. As is frequently observed during field visits, the elite seeds are also finding their way to farms outside the project, most likely through informal seed exchange or diffusion of seeds through local markets.
- In a preliminary comparative yield assessment exercise conducted in the project area over a three year period, the elite durum land race selection (composites) generally outperformed their high-input counterparts, which are represented by improved, high-yielding varieties. The yield performance of these elite materials on the peasant farms was astonishingly high compared to both the original farmers' seed and the most predominant high-yielding variety, Boohie.

The Seeds of Survival programme uses a unique approach for conserving land races in a dynamic and participatory way, involving farmers who manage the bulk of the country's indigenous crop genetic resources and in fact integrate *in situ* conservation into their traditional management strategies. The programme is working to provide farmers with a wider choice of planting material, thereby encouraging sustained supply and use of locally adapted land races, especially in marginal or stressed environments, in which such materials generally perform more competitively than their high-input counterparts.

Two key elements are required for the success of such a programme: equal partnership with farmers in all aspects of project activities, including planning, implementation and further expansion of the programme; and willingness to learn from farmers, who are the living repositories of indigenous knowledge. The success of such a programme also depends in no small measure on close partnership and collaboration between scientists and farmers to achieve a synthesis between modern and indigenous knowledge and thereby create a new knowledge base.



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# GENETIC RESOURCES AND TRADITIONAL KNOWLEDGE IN BRAZIL

Antonio C. Guedes and Maria José Amstalden Sampaio

## Introduction

Brazil holds one of the world's biggest concentrations of biodiversity and since 1933 has enacted many decrees and regulations governing access to its biological diversity. However, attention to the related traditional knowledge (TK), at least in legal terms, was strengthened only after Brazil became a party to the Convention on Biological Diversity (CBD). Brazilian legislators are trying to establish model legislation, but so far not much has been achieved, since the problem of accessing, protecting and using TK with appropriate sharing of benefits is a complicated one.

## Development of legislation

The first proposal for a law was submitted to Congress in 1995 (Senate proposal no. 306 by Senator Marina Silva). It was followed by a second proposal in 1998 (no. 4579 by Congressman Jaques Wagner), and a little later by proposal no. 4751, submitted by the Government. Meanwhile, some individual states began to propose and approve their own texts regulating access to genetic resources within their jurisdiction. The proposal introduced by Congressman Wagner included a suggestion for creating a national catalogue into which members of indigenous and local communities or anyone else could deposit documents related to TK. This would permit better-informed decisions on how to access and use TK when dealing with contracts and further developments, and it should help guarantee equitable sharing of benefits. The proposal also suggested that indigenous and local communities should hold exclusive rights to any TK associated with genetic resources. In its Article 47, the text proposed that no intellectual property rights (IPR) be approved for inventions relating to products and processes that drew on TK or genetic resources not accessed in conformity with the proposed law.

In June 2000, while discussions were taking place in Congress, the Government published Provisional Law (PL) 2052 on "access to genetic resources, protection and access to TK, benefit sharing and access and transfer of technology for its conservation and use", which was similar in content to the Government's earlier proposal to Congress and which subsequently became law.

In its Chapter III, the PL states that TK associated with genetic resources will be protected against illegal use and exploitation or other actions not authorized by the national authority designated to implement the PL. The PL also states that TK can be subject to some cataloging according to further regulations that may be enacted, and that the protection given by this PL should not limit any other IPR that may be applicable to TK. It also guarantees that indigenous or local communities that develop, hold, and preserve TK associated with genetic resources shall have the right to:

- have the source of TK indicated in all related publications, uses and exploitation, therefore as an obligation of the third party;
- stop third parties from carrying out research and from using TK related to genetic resources;
- prevent third parties from releasing information on TK under their control; and
- receive, directly or indirectly, payments or royalties in return for the commercial exploitation of TK.

The PL has been re-edited and the standing version with modifications is numbered 2.186-16 (August, 2001). It was regulated by Decree no. 3.945 (September 2001) which defined the composition of the National Council for the Management of Genetic Patrimony (CGEN). The Council began to deliberate in May 2002 and is creating specific guidelines for the access and use of genetic resources. It is also beginning to analyse project proposals that include areas such as bioprospecting for new plants, animals and microorganisms. However, there has been

no progress in the management of TK. Much more effort will be needed to discuss and implement this component, mainly because there are no models to consider in discussing the subject, which nowadays involves many technical and political aspects.

While continuing to define its national legislation, Brazil is fully committed to supporting the decisions of the fifth meeting of the Conference of the Parties to the CBD, having negotiated together with other parties the text of the Program of Work on the implementation of Article 8(j) and related provisions in Nairobi in May 2000. Among the nine tasks selected for the first phase, task 7 of Element 4 (equitable sharing of benefits) and task 12 of Element 7 (legal elements) are particularly important for the implementation of TK protection, as they deal with the development of guidelines to help ensure legal access and sharing of benefits and to help member countries devise ways of safeguarding and fully guaranteeing the rights of indigenous and local communities to their TK, innovations and practices, within the context of the Convention. In fact, any further help in the advancement of this matter would be welcome.

### **The importance of genetic resources and associated traditional knowledge for the survival of cultural values and the maintenance of quality of life among Brazilian indigenous peoples**

When Portuguese navigators landed on Brazilian coasts in the sixteenth century, there was a native population of around 5,000,000 distributed among 900 different ethnic groups. Today in Brazil there are only about 400,000 indigenous inhabitants representing 215 ethnic groups and speaking 180 different languages or dialects. To this indigenous population the Government of Brazil has allocated 895,424 square kilometres, equivalent to 10.52 per cent of Brazil's territory.

The Kraho Indians are among the very few of these surviving communities that have been able to maintain many aspects of their traditional cropping system and their traditions and way of life. They have survived despite the waves of diseases brought to America by European colonizers. During the 1940s they also withstood violent attacks carried out by non-native settlers to drive them off their land. In 1951, after negotiations with the Government, the Kraho nation was granted 3,200 square kilometres of territory in Tocantins State. The greatest threat to the survival of the Kraho people came in the 1970s, when Government policies encouraged native Indians to exchange their traditional farming practices and crops for modern commercial agricultural systems. For the Kraho, this meant learning how to grow rice, a crop that was completely alien to their culture.

Unlike their traditional itinerant farming systems, growing rice requires intensive cultivation using large amounts of fertilizers, pesticides and other chemicals never before used by the Kraho people. Consequently, the soil of Kraho farms became degraded and agricultural production declined. Malnutrition in Kraho communities rose, as did dependence on Government-sponsored social programs. Over time, the Kraho lost their multicropping system based on landraces, especially corn.

With the introduction of modern crop varieties, the seed varieties that had been developed by earlier generations of Kraho and maintained from generation to generation began to disappear along with the associated TK. According to elderly community members, the lack of those seeds contributed to a gradual loss of community roots, the latter represented by the rituals associated with traditional agricultural methods and the agricultural calendar. This induced many young Kraho Indians to abandon their traditional lands and migrate to urban margins and other impoverished areas.

The attempt to modernize Kraho agriculture failed to consider how a radical shift from traditional farming practices would affect the people's sense of their own cultural identity. Multicolored corn, one of the population's most precious seed assets, was the product of centuries of seed selection and preservation. The native Kraho farmers had successfully developed varieties that best suited their growing conditions and social needs. They planted a variety of seeds to ensure that, no matter what the weather conditions were during a season, some corn would survive. Over the centuries, the rhythms and routines of the growing seasons determined their social calendar and found expression in Kraho folklore, beliefs, art and ritu-

als. Abandoning these traditions created a generation gap in the community, as elders no longer passed on TK to their children and grandchildren. With poverty increasing and cultural identity fading, many Kraho chose to leave their territory for the dubious prospect of finding ways to survive in larger cities.

The true significance of the shift to rice monoculture became apparent when Kraho leaders tried to reestablish their traditional crops, only to discover that they no longer had any seeds. Their corn had gone.

Fortunately, in 1978, with the financial support of the International Plant Genetic Research Institute, Embrapa organized a series of expeditions to collect and conserve seeds, tubers and other plant materials and to rescue endangered germplasm. During the course of one of these expeditions, corn from the Kraho region was taken back to Embrapa's gene bank, where it remained in cold storage until it was demanded back by the Kraho almost 20 years later, in 1995.

For the elderly leaders to see once again the corn that they had known from their youth, corn that they feared had vanished forever, was a profoundly emotional moment. On that occasion, small samples of seed were taken from cold storage chambers and returned to the Kraho communities for planting.

As a result of the successful reintroduction of corn into the Kraho territories, family nutrition improved and community ties grew stronger. The Kraho nation experienced a resurgence of native pride. Now the Kraho people are able to pass on to their children and grandchildren the skills and knowledge developed over the course of hundreds of generations, and their children have the chance to grow up having pride in their culture and heritage.

In 1996 a group of Kraho leaders returned to Embrapa with gourds containing regenerated corn seeds, requesting the preservation of those seeds for their children and grandchildren.

The success of the repatriation of lost germplasm to the Kraho Indians led to the signing of an agreement between Embrapa and FUNAI (the National Indigenous Foundation) for the continuation of this program and also for the collection and conservation of genetic resources on Indian lands with the direct participation and consent of the targeted community so as to ensure the continuation of this best practice contributing to sustainable development.

Between 1995 and 1999, seeds of broad beans, cucurbits, and peanuts and propagation materials for cassava, sweet potatoes, and yams were released by Embrapa to the Kraho communities.

In 1999 a cooperation agreement was signed between Embrapa, FUNAI and KAPEY (the association of all Kraho communities) to ensure the development of an ethnobotanical project with the involvement of all Kraho villages. In this project, a group of researchers including biologists, taxonomists, agronomists, and soil scientists following the guidance of anthropologists and indianists are studying a few species regularly used for food and medicine by the Kraho community and not yet known by non-Indians. The project aims to return economic benefits to the community as well as guaranteeing its food security and the preservation of its environment.

Other native communities, inspired by the Kraho nation's experience, have approached Embrapa about the possibility of participating in similar cooperative agreements. Indigenous communities are now recognizing that biodiversity can be a valuable natural resource on their territories, and a valuable source of nutrition, and that their traditional farming practices are vital for maintaining their social cohesion.



# CONSERVATION AND UTILIZATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE: STRENGTHENING LOCAL CAPACITY FOR FOOD SECURITY

**Murthi Anishetty**

Plant genetic resources (PGR) can be described as the part of biodiversity that nurtures people and is nurtured by people. Agricultural crops, though only one component of plant diversity, comprise a wide range of species of vital importance for ensuring food security. The conservation and utilization of PGR for food and agriculture are inextricably linked. PGR should be made more easily available and useful to plant breeders and farmers for further improvement. In view of this, the Food and Agriculture Organization (FAO) has developed a Global Plan of Action (GPA), which was adopted in 1996 at FAO's International Technical Conference on Plant Genetic Resources (Leipzig, Germany). The plan recommends a major initiative for evaluating existing collections and for making the genetic material itself more easily usable through genetic enhancement and pre-breeding activities.

Much of the world's rural population is wholly dependent on its own farm-saved seed and planting materials for its food security. These materials, therefore, need to be saved in order to prevent food shortages for this vulnerable segment of the human population. The Leipzig Declaration asserted, "Our primary objective must be to enhance world food security through conserving and sustainably using plant genetic resources" (Leipzig Declaration, 1996). Later that year, the world's political leaders, at the World Food Summit in Rome, made a public commitment to end hunger. The GPA for conservation and utilization of PGR for food and agriculture (PGRFA) aims to strengthen local capacity to produce, distribute, and market farm-saved seeds of crop varieties essential for local food security. It aims to help diversify agricultural production systems through increased use and commercialization of local and under-utilized crops. The Leipzig Declaration commits Governments to taking the steps necessary for implementing the GPA. The Plan urges Governments, international organizations, and all sectors of civil society to join forces in a concerted effort to ensure access to food at all times for a healthy, active life for all people of the world.

FAO recognizes the need to enhance food security, and to give due recognition to indigenous knowledge and agro-biodiversity issues; since 1983, initiatives have been taken under FAO's GPA to address the key concerns in these areas. The International Undertaking on Plant Genetic Resources (IUPGR, 1983) has been seen as a vehicle for the management of PGRFA, and since the Earth Summit of the United Nations Conference on Environment and Development (UNCED) in 1992, it has been developed in harmony with the Convention on Biological Diversity (CBD). Its role in providing fair and equitable sharing of benefits arising from the use of PGR for food and agriculture is becoming increasingly important.

FAO's project Gender, Biodiversity and Local Knowledge Systems to Strengthen Agriculture and Rural Development in Southern Africa (the LinkS project) was launched in 1997 to address local and traditional knowledge (TK) issues associated with agro-biodiversity. This project is aimed at enhancing rural people's food security and promoting sustainable management of agro-biodiversity by strengthening the capacity of institutions, in the agricultural sector, to apply approaches that recognize the knowledge of men and women farmers to the programmes and policies of this sector.

This paper briefly describes the Global Plan of Action, the IUPGR and developments in relation to the CBD, and the LinkS project in Africa.

## **The global plan of action (GPA)**

The GPA was based on FAO's first Report on the State of the World's Plant Genetic Resources for Food and Agriculture (FAO, 1997). The Leipzig Conference welcomed this as the first comprehensive worldwide assessment of the state of plant genetic resources for food, agricul-

ture and conservation. This assessment and the GPA were prepared through a participatory country-driven process. 158 submitted detailed reports reviewing their conservation activities and use of PGR. In addition, 12 regional and subregional preparatory meetings were held at which Governments prepared synthesis reports and formulated their recommendations for the GPA. A wide range of non-governmental organizations (NGOs) and private-sector enterprises also participated in the preparatory process. In addition, over 200 individual scientists contributed, largely through FAO's electronic conferences on plant breeding and genetic diversity, which were set up for the purpose. The entire process was guided by the intergovernmental Commission on Genetic Resources for Food and Agriculture (CGRFA), which reviewed FAO's State of the World's PRGFA report and negotiated the GPA, paragraph by paragraph.

The GPA as finally agreed to by Governments consists of 20 distinct activities organized into four main areas: (1) *in situ* conservation and development, (2) *ex situ* conservation, (3) utilization of PGRFA, and (4) institutions and capacity building. (See Table 1.) The successful conservation and sustainable utilization of PGRFA involves action by a wide range of people in every country: policy makers, planners, scientists, germplasm curators, breeders, rural communities and farmers. It is very important when establishing national committees to ensure the involvement of all stakeholders. The GPA is a set of recommendations and priorities intended to provide a guiding framework and catalyse action at the community, national, regional, and international levels.

**Table 1 Priorities outlined in the Global Plan of Action**

<b><i>In situ</i> conservation and development</b>	
1	Surveying and inventorying PGRFA
2	Supporting on-farm management and improvement of PGRFA
3	Helping farmers in disaster situations to restore agricultural systems
4	Promoting <i>in situ</i> conservation of wild crop relatives and wild plants for food production
<b><i>Ex situ</i> conservation</b>	
5	Sustaining existing <i>ex situ</i> collections
6	Regenerating threatened <i>ex situ</i> accessions
7	Supporting planned and targeted collecting of PGRFA
8	Expanding <i>ex situ</i> conservation activities
<b>Utilization of plant genetic resources</b>	
9	Expanding the characterization, evaluation and number of core collections to facilitate use
10	Increasing genetic enhancement and base-broadening efforts
11	Promoting sustainable agriculture through diversification of crop production and broader diversity in crops
12	Promoting the development and commercialization of under-utilized crops and species
13	Supporting seed production and distribution
14	Developing new markets for local varieties and "diversity-rich" products
<b>Institutions and capacity-building</b>	
15	Building strong national programmes
16	Promoting and building networks for PGRFA
17	Constructing comprehensive information systems for PGRFA
18	Developing monitoring and early warning systems for loss of PGRFA
19	Expanding and improving education and training

Source: FAO: 1996



## **The international undertaking on plant genetic resources (IUPGR)**

In November 1983, FAO's Conference Resolution 9/83 established the International Undertaking on Plant Genetic Resources (IUPGR, 1983), which was the first comprehensive agreement on PGR. Its objective was to ensure that PGR – especially species having present or future economic and social importance – are explored, collected, conserved, evaluated, utilized and made available for plant breeding and other scientific purposes. IUPGR was originally based on the principle that PGR should be “preserved ... and freely available for use, for the benefit of present and future generations” as part of the common “heritage of mankind.” This principle, however, was subsequently subjected to “the sovereignty of States over their plant genetic resources” (FAO Resolution 3/91). The 16 years since the IUPGR's adoption have seen heightened interest in biodiversity, culminating in the entry into force of the Convention on Biological Diversity (CBD) in 1993. Advances in biotechnology and related developments concerning intellectual property rights have added urgency, and complications, to the need to develop further an international regime relating to the management of PGRFA. Countries are now looking anew at the IUPGR as a possible vehicle for this purpose. In April 1993, the CGRFA considered the implications for the IUPGR of the 1992 UNCED conference, and of the CBD in particular. Recognizing that the CBD would play a central role in determining policy on PGR, the Commission agreed that the IUPGR should be revised to be in harmony with the CBD.

The IUPGR, with its agreed interpretations, was the first comprehensive international agreement in the field of PGRFA. It sought to “ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, would be explored, preserved, evaluated and made available for plant breeding and scientific purposes”. This was subsequently revised to bring it into line with the CBD. While adopting the Agreed Text of the CBD in 1992, countries also adopted Resolution 3 of the Nairobi Final Act, which recognized that access to ex situ collections not acquired in accordance with the CBD (such as the International Agriculture Research Centre collections) and the realization of farmers' rights were outstanding matters which the Convention had not addressed, and for which solutions should be sought within the FAO forum.

The 1993 FAO Conference accordingly adopted Resolution 7/93, which requested the Director-General to provide a forum for negotiation among Governments for

- The adaptation of the IUPGR, in harmony with the CBD; and
- Consideration of the issue of access on mutually agreed terms to PGR, including ex situ collections not addressed by the CBD and the issue of acknowledging the rights of farmers.

## **The International Treaty on PGRFA**

The International Treaty on PGRFA was adopted by the FAO on 3 November 2001, after seven years of negotiations in FAO's Commission on Genetic Resources for Food and Agriculture (CGRFA). Most of the negotiations focused on developing a Multilateral System of access and benefit sharing for major food crops, and on dealing with issues identified as “outstanding” by the diplomatic conference that adopted the Convention, namely: (1) access to ex situ genetic resources not covered by the Convention, and (2) farmers' rights.

### ***The multilateral system for access and benefit-sharing***

As recognized both by FAO's CGRFA and by the Conference of the Parties of the CBD, a purely bilateral approach to access and benefit sharing is not suitable for the genetic resources of major food crops. There are several reasons for this:

- Agriculture in all countries depends largely on PGRFA that originated elsewhere.
- Future advances in crop improvements, which are needed for sustainable agriculture and food security, require continued access to a wide genetic base without major restrictions.
- Owing to movements of people and resources over past millennia as well as to modern collecting efforts, the genetic resources of major crops are already widely distributed ex

situ, both in gene banks and in production areas, and thus, attribution of country of origin is often very difficult.

Consequently, the new International Treaty creates a Multilateral System for Access and Benefit Sharing, which, for a list of certain PGRFA, “established according to criteria of food security and interdependence”, guarantees facilitated access in return for benefit sharing. The list comprises most major food crops, including cereals such as rice, wheat, maize, sorghum and millet; grain legumes such as beans, peas, lentils, chickpeas and cowpeas; roots and tubers such as potatoes, sweet potatoes, cassavas and yams; and a list of forages (32 genera).

The Treaty provides for facilitated access to material in the Multilateral System for the purposes of food and agricultural research, breeding, and training in this area. A Party is obliged to provide access to PGRFA listed in the Multilateral System on certain terms: (1) when requested to do so by another Party or a legal or natural person under the jurisdiction of a Party, or by an international institute that has signed an agreement with the governing body, and (2) when such PGRFA has been acquired under these same terms. Article 13 of the Treaty provides that benefits arising from the use, including commercial use, of PGR for food and agriculture under the Multilateral System shall be shared fairly and equitably through the exchange of information, access to and transfer of technology, capacity-building, and sharing of the benefits arising from commercialization. There are special provisions for monetary benefit-sharing in the case of commercialization of a product that is a PGRFA and incorporates material accessed from the Multilateral System: “recipients shall pay to [a] mechanism ( . . . ), an equitable share of the benefits arising from the commercialization of that product, except whenever such a product is available without restriction to others for further research and breeding, in which case the recipient who commercializes shall be encouraged to make such payment.” The Treaty also provides for special terms of access to material maintained by the International Agricultural Research Centres.

The establishment of a multilateral system is made by the Parties “in the exercise of their sovereign rights” (FAO, 2001). By agreeing to the terms of the Treaty, countries are, in effect, agreeing that for access to a defined subcategory of PGRFA, prior informed consent will not be required on every occasion, but rather that a multilaterally determined set of mutually agreed terms will apply.

### ***Other provisions of the International Treaty***

This focus notwithstanding, the Treaty has a comprehensive scope. It calls for an integrated approach to the exploration, conservation and sustainable use of PGRFA (Article 5) and includes specific provisions on surveying, inventorying, and collecting PGRFA as well as on in situ and ex situ conservation. Explicit reference is made to “on farm” conservation by farmers, as distinct from in situ conservation of wild PGRFA. This is an example of greater specificity in the Treaty as compared to the CBD. The Treaty’s Article 6 requires Parties to develop and maintain appropriate policy and legal measures that promote the sustainable use of PGRFA. Measures for sustainable use include those aimed at improving the use of PGR through plant breeding by farmers and professional breeders alike and at promoting diversity at all levels. Article 7 of the Treaty calls for integration of these activities into agricultural and rural development programmes and policies. This complements Article 6 of the CBD for the integration of National Biodiversity Strategies and Action Plans (NBSAPs) into sectoral and inter-sectoral policies.

Article 9 of the Treaty states that Parties are to “recognize the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centres of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world”. The Treaty provides for three substantive elements of Farmers’ Rights, including

- protection of traditional knowledge relevant to PGRFA;

- the right to participate equitably in sharing benefits arising from the utilization of PGRFA; and
- the right to participate in decision making at the national level on matters related to the conservation and sustainable use of PGRFA.

In addition to the substantive elements of this Article of the Treaty, the basis for farmer's rights is reflected in the provisions of benefit sharing and finance, which are international in nature.

The Treaty provides for a funding strategy (Article 18), the objectives of which are "to enhance the availability, transparency, efficiency, and effectiveness of the provision of financial resources to implement activities under the Treaty" (FAO, 2001). Further, the Governing Body shall periodically establish a target for such funding to mobilize funding for priority activities, plans, and programmes, taking the Global Plan of Action into account. Priority will be given to the implementation of agreed plans and programmes for farmers in developing countries and countries with economies in transition who conserve and sustainably use PGRFA.

The treaty will enter into force once it has been ratified by 40 or more countries.

## **The LINKS project**

The LinkS project ([www.fao.org/sd/LINKS/GEBIO.HTM](http://www.fao.org/sd/LINKS/GEBIO.HTM)) applies approaches that recognize the knowledge of men and women farmers. Through its programmes and policies, it seeks to enhance the food security of rural people and promote sustainable management of agro-biodiversity by strengthening the capacity of institutions in the agricultural sector. This paper describes the project's strategy, objectives, and collaboration with a diverse group of partners, both government agencies and civil society organizations, in Mozambique, Swaziland, Tanzania and Zimbabwe.

The main strategy of the project is to support, build on, and strengthen groups that are already working on indigenous knowledge, food security and agro-biodiversity issues in the four countries. The objectives of the project are to (a) increase understanding among rural people, development workers and policy makers of the value of men's and women's distinct local knowledge and skills related to the management of agro-biodiversity for food security, (2) strengthen the capacity of key partner organizations to use gender analysis, participatory research and communication for development methods in their work with rural communities to document local knowledge and share information with communities, NGOs, research institutes and policy makers, and (3) promote awareness of the fact that both men and women farmers are custodians of knowledge.

The process and results of the LinkS Project involved NGOs; research, training and academic institutions; government agencies; and policy-making bodies, which are supported, strengthened and developed through the project. The project is participatory, which means that the project teams and management promote the application of participatory principles and approaches in the management of the project and its activities. The first activities began in 1997 in Tanzania and Zimbabwe and focused on identifying (1) individuals and organizations that would be important stakeholders to involve, and (2) pressing issues that needed to be investigated through in-depth research.

This stakeholder analysis yielded important information about the activities of the partners, their needs and perspectives, as well as about the development context in each country. This information was used to refine the project's objectives and to develop a demand-driven programme of activities. The lessons learned from this experience were applied in implementing the project in Mozambique, where full-scale activities began in 1999, and Swaziland, where the process of stakeholder analysis started in 2000.

Since its inception, the LinkS project has had a strong impact. It has built a platform for action among partner institutions in each country by seeding ideas, supporting learning and capacity building, and providing opportunities for debate and discussion. One means of measuring the qualitative impact of the project is to see how ideas and issues have been taken up by partner institutions, and how new initiatives have arisen as a result of project activities. The

following three examples highlight how the project has helped local institutions initiate efforts that, with further support and follow-up, could have far-reaching effects:

- *University-level curriculum development.* Several faculty members from Sokoine University in Tanzania, the University of Zimbabwe and Africa University in Zimbabwe participated in LinkS training courses. This led not only to application of the approaches to their own research but also to initiatives from each of these universities to incorporate LinkS issues into the curriculum. The project is currently funding an initiative from Africa University to work with colleagues at FAO-SDWW in Rome and Noragric in Norway to develop a graduate-level course on “Participatory Approaches to Local Knowledge and Biodiversity Management for Food Security”. With further support from the project, this course will be taught at Africa University during the next academic year. The course design and material will provide a model for the University of Zimbabwe and Sokoine University in Tanzania, and possibly other universities. Over the long term, this activity will help to prepare future generations of development professionals to recognize the value of local knowledge and apply this perspective to their work.
- *Development of a national strategy for local knowledge.* The Division of Environment of the Vice President’s Office in Tanzania is spearheading an effort to develop a national strategy for mainstreaming the use of local knowledge into national policies in the country. The initiative grew out of a joint effort by the World Bank Indigenous Knowledge Program and the LinkS project to put local knowledge issues on the national agenda as a response to the many urgent and nationally pressing issues surrounding local knowledge, biodiversity management, and community rights. This initiative has the potential to provide a framework for coordinated action among diverse organizations and institutions, and to help mobilize support from key government institutions and donors. Phase II of the LinkS project will provide support to key policy institutes in Mozambique, Swaziland, and Zimbabwe interested in initiating similar processes.
- *National network/forum on local knowledge.* A group of participants in the first training workshop (in Tanzania in March 2001) set up a task force for developing a national network on local (traditional) knowledge. The LinkS project has acted as temporary secretariat for the task force and will support a national two-day meeting to formally establish the network. This network could play a key role in establishing a mechanism in the country to share ideas and information on this issue, as well as to advocate change.

The second phase of the LinkS project will continue until 2003 and will achieve its goal through the pursuit of objectives that provide a framework of support to project partners in three interlinked and mutually reinforcing areas:

- *Capacity-building.* To enhance the ability of researchers and development workers from key partner organizations to apply an understanding of gender, local knowledge, biodiversity, and food security in their work by providing them with diverse learning opportunities as well as skills enhancement in gender-sensitive and participatory approaches.
- *Research.* To increase awareness of men and women’s knowledge about the use and management of agro-biodiversity among key development workers and decision makers by supporting documentation of good practices, research, and communication.
- *Action.* To enable partner institutions to develop strategies and take actions that promote greater recognition of rural people’s knowledge, needs and perspectives by providing financial, and technical support for developing the initiatives of the partners at all levels.

The project will maintain its overall strategy of building on partner organizations’ ongoing activities and promoting participatory approaches. However, based on the lessons learned from implementation, Phase II of the project will decentralize decision-making processes and strengthen the country teams in terms of staff and equipment. It will set up participatory monitoring and evaluation processes with partners carrying out activities. It will also put greater emphasis on facilitating and supporting local initiatives and encourage cost sharing and pooling of resources.

The following results are expected from the project:

- Enhancement of the knowledge and understanding of more than 700 researchers and development workers concerning the linkages between gender, local knowledge,



biodiversity, and food security, with particular emphasis on how to apply this knowledge in development programmes, research activities, and policy frameworks.

- Development, testing, and dissemination of gender-sensitive and participatory tools and approaches for documenting local knowledge and supporting community-led processes for sustainable use of biodiversity.
- Empowerment of rural men and women through discussion of their knowledge and perspectives, and follow-up action to address their needs.
- Improvement in the knowledge base of local knowledge and best practices for the management of biodiversity, and sharing of this information with key stakeholders concerned with environment and agriculture.

The project is also expected to assist the partners in:

- Replicating and disseminating good practices;
- Setting up informal and formal networks to solicit support, share information and advocate change; and
- Mainstreaming the use of local knowledge and related issues in institutional strategies and programmes as well as national policy frameworks in the areas of agriculture and the environment.

## Conclusions

Plant genetic resources offer enormous opportunities for economic growth and sustainable food security. Considerable genetic diversity presently exists all over the world, especially in ex situ collections, and their maintenance and utilization are essential for realizing benefits. Thus the challenge is to link conservation and development in order to derive benefits from PGR. This requires that Governments, scientists, gene banks, and relevant agencies work with farmers and other stakeholders as partners in the conservation, management, and future development of genetic resources. If these efforts are to succeed, there is also a need for greater access to plant diversity, enhanced germplasm, relevant information, and new and improved technologies. FAO is currently overseeing and providing technical and regulatory mechanisms for the global community to foster linkages, and to develop networks for opening up new opportunities for better management and utilization of PGR and enhancing the recognition and application of TK for food security. The organization and success of the efforts depend on the infrastructure of national programmes and on the capabilities of the countries and other stakeholders involved in the process. It is also important that the changing scenarios of regulatory frameworks and the agreement reached on establishing a multilateral system of access and benefit sharing through the International Treaty on PGRFA be taken into account when framing national laws on plant genetic resources.

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# FOOD, POWER, INTELLECTUAL PROPERTY AND TRADITIONAL KNOWLEDGE: A FOOD SYSTEM OVERVIEW

Geoff Tansey

## Introduction

Millions of small farmers, herders, fisher folk and artisanal producers of foodstuffs, in whom traditional knowledge (TK) about food production resides, face an enormous challenge if their knowledge, livelihoods and skills are to thrive and be rewarded in the future. So too do policy makers wanting to support their development and safeguard their place in the food system.

This paper provides an overview of developments in the food system of the industrialized world, which is being globalized today.<sup>1</sup> The food system is a complex web that connects the following components:

- *Biological*: the living processes used to produce food and their ecological sustainability
- *Economic and political*: the power and control that different groups exert over the various parts of the system
- *Social and cultural*: the personal relations, community values and cultural traditions affecting people's approach to food and its use

These components are not static but interact dynamically as the various actors in the food system juggle them in pursuing their own interests. Four key issues underpin these interactions, namely power and control, risks and benefits: who will have what power over their part of the system, which of the different actors in the system will get how much out of it, and who will get the benefits and carry the risks arising from different activities.

Today's food system has a history in which globalization of basic food crops has taken place over thousands of years, but especially since the European colonization, and is now continuing in new forms. Much food crop development has been based on a sharing of knowledge and materials among farmers. A historical understanding of how the system has reached its present form is a necessary base for looking at future developments but is beyond the scope of this paper.

The food system is also a *biological* system relying on a well-functioning biosphere on which human activity is having an increasing impact. Today, there are some who seem to think, but do not explicitly say, that *in extremis* we can invent our way out of any environmental problem or change we might cause. Others seem to hark back to some idyllic environment before human hands reshaped it and oppose any interventions. Neither extreme seems appropriate for sustainable human development. As the World Commission on Environment and Development noted in *Our Common Future* (1987), "there are broad areas of the Earth, in both industrial and developing nations, where increases in food production are undermining the base for future production". The long-term sustainability of food production is essential and poses a challenge to current dominant production systems. This is an area where TK may have an important role to play in guiding development of sustainable production systems.

Finally, our *human needs* and wants, physiological and psychological, social and cultural, are played out through food. These needs interact and are complex. The prevailing norms and laws governing activities in the system result from the way particular interests are able to shape the legal framework.

It is against this background that the key actors in the system – farmers, input suppliers, traders, manufacturers/processors, distributors, caterers and consumers – operate. There are differences of interests within any group – for example, between small and large farmers – but these will not be discussed here.

This introduction has provided a context for discussing issues relating to intellectual property rights (IPR) and TK. While some TK-based producers may be able to use various tools in the food system, including IPR, the prospects for their doing so successfully, and on a scale



that would enable the majority of them to survive, are remote without fundamental changes in the direction of current trends.

## **Trends among key actors**

### ***Farmers***

Farmers are at the riskiest end of the food system. They are dependent on uncertain and increasingly unpredictable environmental conditions and macro-economic policies over which they have relatively little influence. As small-scale operators buying from and selling to larger operators, they are increasingly squeezed by them. This pressure helps fuel consolidation of farms and increases in farm size. The key trends in farming are towards fewer farmers and larger farms.

Labour is being replaced by capital investment in intensive farming systems – machinery, fertilizers, pesticides – and mixed farming enterprises are being replaced by much more limited operations focusing on cereals, dairy or meat or by even more monocultural, factory-style production units for poultry and pig production. This has shifted employment and skills off the farm into factories producing specialist inputs for farmers. It has also moved farming into a more industrialized style of production, with inputs, outputs and waste products, which places less emphasis on the kinds of cyclical processes within an ecological balance that are a feature of TK-based farming systems.

A shift to capital inputs both increases the capital required to get into and remain in farming, and fuels the indebtedness of farmers. As producers of primary commodities, farmers now need to produce more to buy the same quantities of other goods, as the terms of trade have shifted against them. Less and less of the money spent on food in industrialized societies goes to farmers, with the decline in the United States going from some 40 cents of every dollar in 1910 to just above 7 cents in 1997 (Halweil, 2000).

The nature of farmers' skills is also changing in the industrialized approach to farming. While various studies show that relatively small farms are the most efficient in producing food from a given area in usually complex polycultural systems, this production depends on high levels of labour input, local knowledge and management skills, all typical of TK-based systems. This is not the measure of efficiency used for modern farms, however, which looks at output of a specific crop or commodity per unit of labour and capital invested.

Critics of industrial farming want to look more broadly at the economics involved than just production costs – that is, at the efficiency of resource usage and environmental sustainability. They also question the level of subsidies, with OECD (Organisation for Economic Co-operation and Development) figures for 1999 putting the total level of support for agriculture in the OECD countries at US\$361 billion. This covers support to agricultural producers (nearly 80 per cent of the total), consumer subsidies (about 15 per cent) and expenditure for general services such as research, marketing and infrastructure used by agriculture (OECD, 2000).

Though farmers react to changes in the food system, rather than lead them, because of the historical and continuing power of landed interests they still retain a powerful lobby in most developed countries. But the power is often with larger rather than small or marginal farmers. Only rarely, as happened in the Highlands and Islands of Scotland in the late 19<sup>th</sup> century with the crofters (small-holders), are the property rights of landowners curtailed in the interests of supporting traditional farming communities.

### ***Input suppliers***

Before the industrialization of agriculture, farm supplies were mostly generated on the farm. Draught animals, either raised on farm or bought, and small pieces of equipment were produced locally. With the development of capital-intensive, high-input agriculture, farmers increasingly rely on outside suppliers to provide their tools, buildings, fertilizers, seeds, fuel and feedstuffs. Most of these suppliers have grown to become huge conglomerates, often servicing a global market and taking a global view of their business. They include:

- Agrochemical industries

- Seed producers and feed manufacturers
- Biomedical companies
- Equipment and energy producers

Input providers need not be geographically based, can distribute their products over wide areas, and want to maintain and expand their markets. A few large companies tend to be dominant in each market. As pressures mount for changed practices to meet environmental concerns, these large input companies are diversifying or regrouping to remain important players. For example, seed-producing companies, until recently usually local or national concerns, are being bought by the major chemical industries, which are also moving into genetic engineering.

Their size helps give them the capacity to operate large-scale research and development (R&D) facilities, and, as governments increasingly fund basic research from which farmers cannot benefit directly, these companies become the key beneficiaries of publicly financed research. As the Nuffield Council observed, there are “six major industrial groups who between them control most of the technology which gives [them] the freedom to undertake commercial R&D in the area of GM [genetically modified] crops” (Nuffield Council on Bioethics, 1999).<sup>2</sup> The increased scale of R&D has led to a neglect of low-cost, locally specific technological development that could improve the effectiveness of more extensive and TK-based farming systems.

### ***Traders***

Traders – importers and exporters, brokers and merchants – are the least visible group of actors between the farm and the mouth. The world’s food trade is a massive business in which commodities from developed countries dominate. Primary commodity exports also make a significant contribution to trade in many industrialized countries. Traders are tending to become fewer and bigger, with ever-larger market shares. Six companies, for example, dominate the world’s grain trade.<sup>3</sup> Although some products are traded in packs, such as tinned salmon, most are traded in bulk for further processing into food and beverages or for use as animal feedstuffs. Around five per cent is used as raw material for industry such as textiles.

Timely information about growing and market conditions throughout the world is crucial to traders’ success, and the biggest players are developing their own information systems using the latest technology. Some companies, such as Cargill, are extending their activities right through the food chain into producing animal feed and ingredients, meat (beef, chicken, pork and turkey) and food processing. Large-scale commodity traders are likely to be less interested in the smaller volume of production and often non-standardized products that characterize TK-based farming systems.

### ***Workers***

The food system is a major employer, but as it becomes more industrialized, fewer people work on farms and more work to supply inputs and transport and transform the outputs. For workers in any part of the food system, however, wages and conditions tend to be poorer than average, with the manufacturing and processing industries usually being the best paid.

Workers’ organizations are concerned that the trend throughout the system is towards the replacement of human labour by machinery – which does not bargain – and towards increasing the amount produced per employee. Usually the most skill-dependent and costly processes are mechanized first. Another trend is to replace full-time jobs with part-time jobs. Overall, workers have little, if any, say in what goes on in the system. Such trends are likely to be antithetical to the values and labour and social relationships in TK-based farming systems.<sup>4</sup>

### ***Manufacturers and processors***

Food processors in many cases started as preservers of food but now often manufacture foods from a basic set of ingredients. By having wide-ranging sources of supply, they can smooth out climatic variations affecting farmers while still keeping produce flowing through their factories. The processors grew, diversified and became the biggest players in the food

system in many countries until the 1980s, particularly in Britain and the United States.<sup>5</sup> By the early 1990s, in Europe, most product markets were quite concentrated, with the top three suppliers tending to dominate. The manufacturers had developed branded products targeted at increasingly segmented markets, using brand images to attract customer loyalty.

In 1993, the chairman of Unilever, the Anglo-Dutch multinational, called brand equities the most valuable items in their stewardship and saw the power of their brands as the engine of long-term growth. During that year, the company spent almost 12 per cent of turnover (just under US\$5 billion) on advertising and promotional investment. In the United States, three conglomerates have a high degree of vertical integration and increasingly dominate the food chain there (Halweil, 2000). Large food enterprises also often have considerable R&D budgets.

Recently there has been a spate of mergers and acquisitions in the food industry (a trend that continues as firms gear up to better serve global markets and also to counter the growing power of multiple retailers). Brands remain a crucial part of their strategy, although Unilever has announced it will eliminate three-quarters of its 1,600 brands to focus on 400. Achieving brand identity is a major challenge for TK-based producers selling into markets dominated by brand advertising.

### ***Distributors - wholesale and retail***

Wholesale and retail distributors move foods to the point of sale. The trend among them, too, has been towards ever-larger businesses. Multiple retailers came to dominate food distribution in many industrialized countries in the 1980s, and many small shops and wholesalers were squeezed out. In Australia, the United Kingdom and the United States, for example, a few companies now control the vast majority of the food moving into consumption, producing a highly concentrated food-retailing sector. In Britain by 1993, just five multiple retailers handled 65 per cent of the retail food trade.

Many multiple retailers have moved into own-branded goods, and their shops have become brands in themselves. The aim of these retailers is to have shoppers meet all their food shopping needs in their store. Their basic message to consumers is “Trust me to deliver whatever you want in food” – whether that food is a branded product or has been made for the retailer and carries the latter’s own label.

Multiple retailers now influence the products produced, and the methods used, by their suppliers. Most major multiples in Britain, for example, have developed variations on integrated crop management systems their growers must adopt, and they often have direct relations with the growers. Such contacts might provide opportunities for TK-based producers. Today, with organically grown products enjoying something of a consumer boom, multiple retailers are investing in research into them, encouraging suppliers to move to organic production and strongly marketing organics. In the United Kingdom, retailers have also, after considerable public pressure, led the demands to their suppliers to remove genetically engineered ingredients from all their own brand products, and they are now doing the same for the feed given to animals used in those products.

National multiple retailers are increasingly looking to expand into other countries, with Migros of Switzerland and Tesco in the United Kingdom expanding in some developing countries and WalMart from the United States acquiring Asda in the United Kingdom. Multiple retailers make extensive use of information technology, with laser scanning linked to stock control and just-in-time delivery allowing the maintenance of smaller warehouses and less stock. It also allows slowly moving lines to be dropped more quickly and permits quicker reaction to consumer buying trends. The switch in market power has meant that retailers have been able to capture a greater share of the profit to be made from food.

### ***Caterers***

More and more food is consumed outside the home. For retailers this trend represents lost business, but it is a growing phenomenon in rich world markets. In 1980, only about one in 12

meals was eaten out in the United Kingdom, but this figure rose to one in seven in 1990 – still far short of the one in 2.5 figure seen in the United States, where almost half of food dollars were spent on meals and snacks away from home.<sup>6</sup>

Caterers are now the single largest employers in the food system in industrialized countries. An economic and technological revolution is going on in catering, with the emergence of large catering companies operating in many areas – both as contract caterers to a closed clientele in factories and offices and as consumer caterers using branded outlets. Technical changes, such as cook-chill and cook-freeze, and other centralized production methods are also being introduced. These changes concentrate production facilities and require well-controlled storage and distribution networks. Such systems demand adherence to high technical and safety standards for effective operation. Contract caterers are also replacing in-house canteens. Caterers, not eaters, determine the ingredients, recipes, dishes and cooking methods for markets based on a whole range of market information about consumer tastes.

Standardized product delivery through widely advertised branded outlets is also growing, with McDonald's perhaps the world's best known and largest franchised food service organization. As such outlets spread, they pose a threat to the multi-billion-dollar industry of informal street food businesses that provide much of the catering in developing countries and tend to use local produce and make local dishes. These are rarely supported with public provision of clean water, and yet they play a significant role in feeding millions of people in developing countries cities, according to FAO (1992).

### **Consumers**

Not all eaters are consumers. Consumers tend to be people in urbanized, industrialized societies who spend money on goods and services. But there has been continual extension in the reach of the market and an increase in the numbers of consumers worldwide. While women's traditional responsibility for the preparation of food from basic ingredients has been transferred to the world of supermarkets, it is still usually women who take responsibility for meal planning and food purchases and who balance the household budget.

For consumers, the skills needed to select and prepare food are changing. Control of what goes into foods has passed to others. People have ceased to be producers, processors and preservers of food at home as these functions have become centralized in larger and larger enterprises, and as more and more people, especially formerly domestically focused women, have entered the job market. People are losing not only the skills needed to handle raw food-stuffs but even the skills needed to recombine convenience ingredients for meals.

Shopping is an increasingly difficult activity, with individual shoppers finding themselves facing 20,000 or more items in a supermarket, many with implicit or explicit nutritional claims. Food fulfils a very complex role in our lives and is used for many purposes, of which nutrition is but one. Shoppers also have a wide range of concerns, from individual concerns about the affordability of what they wish to buy to questions about whether a product is wholesome, ecologically sound, produced with sufficient regard for animal welfare, or acceptable to other family members. To make quick selections from a variety of options, shoppers use various kinds of discounted decision making, and advertising is a key method used to influence such activity. Those marketing food also spend huge amounts on market research and pitch their advertisements to appeal to one or more of the various needs that food fulfils in the lives of people.

Consumers are individuals and as such have little direct effect on the food system except when they act en masse (for example, by ceasing to buy a product, as happened with beef during the mad cow disease crisis in Britain), or when sufficient numbers boycott certain goods or act through consumer organizations. Their greater role lies as citizens helping to shape the rules for the food system through the political process (Gabrial and Lang, 1993). It is here that they might have the most influence in asking for policies that support TK-based farming systems.

## **Constraints and concentration**

### ***Limited demand***

The major actors in the food system supplying the industrialized world must all contend with the reality of limited demand. One cannot increase one's food consumption two-, three- or fourfold and survive for long without major health problems. In the industrialized world, despite the existence of some degree of food poverty, farming faces the problem of overproduction and food retailers that of overfed customers who spend a declining amount of their disposable income on food. The main actors in the food system are thus more or less forced to do the following:

- Compete more aggressively for the money spent on food
- Increase their use of technology to generate greater returns on investment
- Seek increased productivity from the labour and capital employed
- Diversify their activities

One response has been to divide markets up into ever more segments and then market products to appeal to different consumer groups within those segments. The resulting proliferation of niche products appealing to different interests (relating to health and environmental concerns, animal welfare, development, etc.) provides more opportunities to produce "added-value" or profitable products. This kind of development offers opportunities for foods produced using TK. Companies can also look beyond their saturated markets and expand into global markets.

### ***Concentration and control***

There have been long-term shifts in the balance of power among various groups of actors – first from producers to manufacturers and processors, and then, in recent decades, to multiple retailers which set terms for their suppliers and may even charge shelving fees for product placement and dictate product retail prices. In particular, two key trends are evident:

- 1) An increasing concentration of economic power within all sectors. Fewer and fewer organizations and firms account for larger and larger market shares.
- 2) A search for ever more controlled systems relying less and less on the vagaries of weather, human labour or environmental fluctuations. Actors use various tools to help achieve greater control, in particular scientific knowledge and technological developments, information, and management.

## **Tools for control**

### ***Science and technology***

Historically, technological developments have not necessarily depended on a correct scientific understanding of why something works. Trial-and-error invention produced many new technologies before the science behind them was understood, and it is still the basis of much innovation in TK-based systems. Improved scientific understanding underpins modern technological development, such as that in modern biotechnology. However, its exploitation through trial-and-error technological development, notably in genetic engineering, does not require a thorough understanding of how organisms work, how the whole genetic code is expressed, and so on. It is, literally, engineering with new materials. Even without knowing in precise detail what happens when genes are added to an organism, one can observe their macro effects and use these to redesign living organisms.

The different actors in the food system finance a wide range of research and use increasingly sophisticated technologies. Those who can introduce innovations first stand to gain the most benefit from them. Technology, however, is more than a tool; it also concerns the organizational requirements, management and other knowledge that is embedded in tools.

Science and economic interest can be in conflict, as R. C. Lewontin, professor of zoology at Harvard University, argues was the case with high-yielding hybrid maize. In fact, high-yielding open-pollinated maize could be bred, but this is not in the interests of private companies, which



need new sales of hybrid seed each year. Because of the way in which hybrid maize was developed, it has also become something of a dogma in the agricultural research institutes that hybrid maize is the only way to get high yields.<sup>7</sup>

### ***From public to private research***

Most R&D in recent decades has focused on capital-intensive, high-input types of farming. Historically, most agricultural R&D was done to produce results that were then freely made available to farmers. Society expects to benefit from such investment in terms of greater food security through improved farming practices. More recently, however, the governments of some industrialized countries have withdrawn from near-market research and concentrated on basic research, leaving private firms to do the more market-oriented research. There has also been a movement of funding away from the farm level to other areas of the food system – for example, to address post-harvest and food safety concerns.<sup>8</sup>

The expansion of private-sector interest in agricultural research is largely a result of the powerful new tools embodied in modern biotechnology. Re-engineering crops to link their structure and properties more closely to the interests of food processors or to the use of proprietary chemicals has drawn new players from the chemical and pharmaceutical industries into the business of seed production. These companies have a long history of using patents as business tools and desire control over their rights to (i) the results of their research and (ii) the prevention of reuse of their products, such as seeds, without their permission and without further payment. They support moves to restructure the legal system by extending patents to life forms in order to control the use of discoveries and innovations.

### ***A broken bargain***

The growing use of intellectual property rights (IPR) in agricultural R&D has fuelled a strong sense in developing countries and among some in the international agricultural research community that, with germplasm used in breeding programmes (which is largely provided by the south for free) still in the public domain but science becoming increasingly proprietary, an implicit bargain has been broken (Serageldin, 2000). Indeed, Joseph Stiglitz (1999), former chief economist at the World Bank, argues that “basic research and many other forms of knowledge are not, and almost certainly should not be, protected by an intellectual property regime. In these areas efficiency requires public support. And public support must be at the global level”.

The development of IPR legislation in agriculture – both plant breeders’ rights and patents – is already having some effects on the exchange and use of plant genetic resources. In the United States, for example, one researcher discovered that public-sector breeding programmes are finding it harder to get materials from companies, which has interfered with their ability to release new lines and train students (Riley, 2000). The director of one international agricultural research institute stated that the expansion of plant breeders’ rights is causing some collaborators to send not their best but their second-best lines for use in the breeding programmes, which diminishes the results for everyone.<sup>9</sup>

There are growing concerns that privatization will affect the future direction of research and the nature of science, with the results of scientific research not being shared as openly as in the past. The ability to influence the direction of research and capture its results, however, is of vital interest to the major actors in the food system. Those who can introduce innovations first stand to gain the most financial benefit, greatly improving their performance. Areas where companies cannot capture benefits, such as higher-productivity low-input farming by poorer farmers using TK-based systems, are less likely to be funded than those where patentable or controllable products, such as hybrid seeds, will be produced.

### ***Information***

More generally, the ability to monitor, use and control information is a key to success for the actors in today’s food system. Information technology has transformed information systems,

both public and private, offering a degree of complexity, immediacy and control undreamed of only a few decades ago. It can be used to provide detailed profiles of customers, or about growing conditions and price levels around the world. This information is often very specialized; it is privately produced; it is normally kept confidential; and it must be expertly processed in order to be transformed into useful knowledge.

While consumers and farmers tend to rely on publicly available information, larger actors use more private sources. This information may be in the form of R&D results, market research or expert advice. The capacity of the main actors in the food system to gather, interpret and use information is much greater than that of an individual. Professionals study people's needs, wants, hopes and fears when designing sales campaigns. Slick names are showered on increasingly narrow segments of the population by market researchers.<sup>10</sup>

The spread of global media broadcasting similar images across the globe help fuel product globalization, as Coca Cola's chairman in the early 1990s, Roberto Goizueta, recognized in the company's 1991 annual report: "In many important ways, the world's markets are also becoming more alike. Every corner of the free world is increasingly subjected to intense and similar communications: commercial, cultural, social and hard news. Thus, people around the world are today connected to each other by brand-name consumer products as much as by anything else." This global spread of images of the "good life" can undermine the value people see in TK-based systems and alter people's aspirations, especially if their culture is not given coverage in local mass media.

### ***Management***

Work organization has shifted in the past 100 years from craft-based, small-scale production through a large-scale mass production phase, which is still dominant, to a newer lean production phase, which is likely to dominate in the future. This latter model uses just-in-time manufacturing and stocking techniques, practices similar to those pioneered in the car industry. In the United Kingdom, for example, multiple retailers spent hundreds of millions of pounds in the 1980s to develop the logistical systems that would most effectively supply their growing number of sites – which generally led them to establish a few depots to which suppliers had to deliver. Such systems require the smooth functioning of the supporting infrastructure, which can all too easily be disrupted.

### ***The social challenge***

The challenge for societies and political entities is to establish the framework within which actors in the food system work – a framework based on a whole range of policies affecting food but rarely viewed as an overall food policy.<sup>11</sup> These policies are used to set up the laws, rules and regulations governing the actors. Some of these actors, such as limited liability companies, have been created by other laws, and these companies given rights as judicial "persons". Some of these laws were developed during the Industrial Revolution to promote investment and innovation while limiting risk for those involved.

It is in this context that debates concerning IPR and the potential of TK to benefit its holders need to be viewed. Technological innovation and IPR are used by actors in the struggle for market power – in the fight to capture benefits, limit risks, and extend power and control in various parts of the food system. The market structure today is increasingly oligopolistic, and both technological innovation and IPR may be used in the struggle for market power.

### ***Technological innovation and market power***

Technological innovation has long been seen as a way of entering an industry, and patent-protected innovation has been used to gain legal quasi-monopolistic control of certain products and sectors. In the nineteenth century, inventors like George Eastman (of Kodak) and Thomas Edison sought patents to enable them to capture monopoly profits (Jenkins, 1975). By institutionalizing innovation in R&D labs in the nineteenth century, "large corporations sought



to control technological change as a means of protecting and fortifying their positions in the industry,” argues Reese Jenkins (1975) in his study of Kodak.

Today, IPRs linked to technological innovation are a tool in the battle for market power. “Companies now seek protection through IPR in more countries than they did in the past in order to: (i) expand their market share, (ii) prevent competitors from becoming active in those countries, or (iii) as a bargaining tool to negotiate favourable local agreements,” argued a study of agricultural biotechnology in the early 1990s (Van Wijk, Junne, Cohen and Komen, 1993).

Biotechnology may bring another power shift in the food system, from retailers and food manufacturers to those industries supplying the primary producers. However, the actions of some companies wishing to introduce genetically modified soya while refusing to segregate crops made a mockery of the idea of consumer choice and infuriated the European public. They also represented a major defeat for the retailers’ ability to truly offer customers a choice, as they claimed to be able to do. So far, they have decided to fight back and insist on being able to choose the ingredients that go into their products and have sought non-genetically engineered sources, providing traditional farmers with new opportunities.

## **Restructuring the regulatory framework**

In the 1980s, pressures grew to revise the regulatory framework governing biological resources, partly because of technological developments that were taking place. Three agreements are central to the revision of this regulatory framework: the Agreement on the Trade-Related Aspects of Intellectual Property Rights (TRIPS), the Convention on Biological Diversity (CBD) and the International Undertaking on Plant Genetic Resources for Food and Agriculture (IUPGR). The CBD is a framework agreement that leaves parties free to implement it through their own legislation. The IUPGR was renegotiated to bring it into harmony with the CBD, to regulate access and benefit sharing specifically for plant genetic resources for food and agriculture. These negotiations culminated in a new International Treaty on Plant Genetic Resources for Food and Agriculture in November 2001. The Treaty also covers the *ex situ* collections of germplasm held in the gene banks of the international agricultural research centres belonging to the Consultative Group on International Agricultural Research (CGIAR).

### ***The CBD and the IUPGR***

The CBD’s three objectives are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising from the use of genetic resources.<sup>12</sup> The CBD brought genetic resources formally under national sovereignty. It requires countries to take measures to ensure the conservation and sustainable use of such resources as well as the sharing of benefits arising from their use, and it makes access to them subject to the prior informed consent of the state rather than of the community involved. However, the CBD developed from a natural resource mining mentality in which developing countries felt they had undervalued wild biodiversity that would be useful to developed countries and major industries, such as pharmaceuticals. For agriculture, the winner-takes-all mentality that the CBD seems to have fostered in relation to the exploitation of wild biodiversity pays scant attention to the different nature of agricultural genetic resources, which, as was pointed out above, have been developed, exchanged and mixed up around the globe for millennia. Indeed, countries rich in wild biodiversity, such as Brazil, are typically poor in agricultural biodiversity and rely on crops from elsewhere for 95 per cent of their food.

The CBD failed to recognize sufficiently the special needs of agriculture; only later, in decisions of the Conference of the Parties (COP), did it recognize these and support the renegotiation of the IUPGR, which was originally based on the premise of germplasm as a common heritage of humankind. It recognized that current crops have been developed by the activities of farmers over millennia. Renegotiating the IUPGR is proving a very difficult task. The most recent negotiation draft text includes a provision recognizing that, should any germplasm be removed from the general pool available for further breeding by having patents taken out on it,

then this would create a loss to society as a whole that should be compensated by payments into a fund to promote the use of genetic resources.

The CBD did recognize, in Article 8(j), the need for *in situ* conservation of biodiversity and the need to protect indigenous knowledge. Article 8(j) requires states, subject to their national legislation, to preserve the knowledge, innovations and practices of indigenous and local communities insofar as the knowledge, innovations and practices serve the goals of conservation and sustainable use of biodiversity. In agriculture this comes about through the use and development of the knowledge in farming communities. The CBD also requires states to diffuse the knowledge, innovation and practice with the cooperation of the holders of that knowledge. It also requires states to encourage the sharing of any benefits arising from such diffusion.

### ***Trade-Related Aspects of Intellectual Property Rights (TRIPS)***

The TRIPS Agreement is an international legal instrument that was born out of big business interests, as Peter Drahos (1995) demonstrates. A handful of corporations and lobbyists were responsible for crafting its terms and pushing the agreement through the Uruguay Round and into the WTO with the help of the governments of various developed countries. Most notably, in the United States, the debate about the need to strengthen the IPR regime was couched in terms of ensuring and maintaining the country's "competitive advantage in the global system" (May, 2000).

Article 7 of the TRIPS<sup>13</sup> Agreement:

- creates minimum standards of intellectual protection that all WTO Members must recognize;
- ensures that the States make available to "right holders" institutional procedures to enforce their intellectual property rights; and
- provides a procedure for regulating disputes between States concerning their obligations under the agreement.

Article 27.3(b)<sup>14</sup> gives WTO Members discretion about whether or not to allow plants, animals, biological processes for the production of plants or animals and plant varieties to be patentable (see Tansey 1999) but requires Members to provide patent protection for microorganisms and non-biological and microbiological processes for the production of plants and animals. Members must also either grant patent protection for plant varieties or provide protection by means of an effective *sui generis* system.

Plant variety regimes allow for the registration of a plant variety that has been discovered. Members can either design their own system for the protection of plant varieties or choose to implement the system developed by the International Union for the Protection of New Varieties of Plants (UPOV). UPOV defines a breeder as the person who bred, or discovered and developed, a variety (see Article 1 of the 1991 UPOV Act). Such a variety must be distinct, stable, sufficiently uniform, and novel. TK-based varieties do not normally meet these criteria, and various countries are trying to develop their own systems, although there is considerable pressure for most to adopt the UPOV system. The larger the number of approaches taken, the more difficult it will be for a WTO dispute panel to decide what constitutes an effective set of standards and *de facto* introduce one by looking at UPOV as the main standard.

In general, the current international IPR regime, unlike, for example, that in the environmental arena, has been developed by a narrow set of actors, with relatively little involvement by civil society as a whole. These actors have been drawn mostly from the legal and industrial fields and, as "epistemic communities", are very influential in shaping the global regulatory framework, as John Braithwaite and Peter Drahos (2000) show. Such "an epistemic community is composed of professionals (usually recruited from several disciplines) who share a commitment to a common causal model and a common set of political values. They are united by a belief in the truth of their model and by a commitment to translate this truth into public policy, in the conviction that human welfare will be enhanced as a result"(Haas, 1990). In the IPR field, it is a relatively small group, representing powerful corporate interests and a profession in whose interests it is to have strong IPR, that has driven the development of the current regime.

### ***IPR in the struggle for market power***

IPR in biological innovations and new technology are used in a struggle for future control of the basic inputs to the food system and the products sold to consumers. Those most involved in product production make the most use of patents, plant variety protection (PVP), trade secrets and trademarks, while those closest to the consuming public make greater use of trademarks, and increasingly of databases, and some specialist producers in particular use geographical indications. As the reach of the market, especially an increasingly globalized market, extends further into developing countries, so too will the major actors make use of IPR as part of their business development strategy.

IPRs have clearly contributed to the development of biotechnology (Barton, 2000):

- They have underpinned its development by private industry as they help ensure the possibility of private profit.
- They have contributed to a restructuring of the market and centralization of firms. The seed industry, once the preserve of small firms, has become dominated by five major firms, in part as a response to litigation over broad patents awarded in the early days of transgenics in the United States. Mergers and acquisitions were the easiest way to resolve some of these disputes and represent the ultimate in cross-licensing.
- They have increased investment in product development, which requires stronger marketing ability, bigger markets and the legal capacity to defend specific interests.

The biotech firms are interested in the major grains and industrial crops in developed and major developing countries, such as Brazil, China and India, and they control many of the advanced technologies needed to reshape them. As John Barton (2000) has pointed out, this challenges those working to benefit poor farmers to rethink whom they are working for and in what crops and areas; what kinds of partnerships can be created; and whether the technologies may be applied royalty-free for the benefit of poor farmers who are often using TK-based systems. There are a number of concerns for developing countries:

- The effect on seed prices, which are expected to increase tens (not hundreds) of percentage points, is a reason why public seed provision will be needed in countries with oligopolistic seed markets.
- The use of trademarks, patents and PVPs to protect major developed-world markets from competition will increase, as likely will the need for lawyers.
- The use of patent portfolios to restrict follow-up research by potential competitors and public-sector bodies will require countries to ensure that developing-country researchers have a legal right to use such research.
- Oligopolistic tendencies will need to be countered through competition and antitrust measures.
- Restrictions will be needed on broad patent claims and patents on fundamental innovations.

The companies keenest on a genetically engineered future for plants and animals clearly recognize the benefit of packaging their technology in the seed and linking it to other inputs. Those who speak about the need for participatory technology development with small farmers and an agro-ecological approach to agricultural development also recognize the importance of seeds. They argue that in seeds are farmers' strategies for managing the land and the risk, with farmers in TK-based systems in the Andes, for example, using hedgerows as decentralized and farmer-managed *in situ* gene banks. They also argue that agricultural biodiversity is not just genetic resources but also the economic and social systems surrounding them. Changing seeds will change relationships in the communities.

### **A place for TK?**

#### ***In the future of farming***

Following are the major social and economic benefits of TK (which includes both traditional and indigenous knowledge) for the food system:

- It provides a livelihood for millions of people.
- It supports a wide variety of types of farming.

- It helps in maintenance and development of *in situ* biodiversity.
- It supports production in areas that high-tech farming regards as marginal.
- It includes knowledge about how to produce sustainably from low inputs in a wide variety of environments.

Various researchers, small-farmer organizations and NGOs are calling for a reorientation of both R&D and agricultural policies to support the use of TK. However, they face major challenges given current developments in the food system that take little if any account of TK. The kinds of farming practices and social and environmental relations involved in TK approaches to food are in many senses antithetical to those of the dominant paradigm. As Thomas Cottier notes about what happened to TK in developed countries, “once the IPR systems were fully established, they undeniably contributed to the loss of traditional knowledge in industrial society. New products replaced the need of such knowledge, and, generation after generation, it was increasingly lost and no longer passed on, while at the same time, standards of living were rising for most people” (Cottier, 1998).

This is a worrying prospect for those concerned about biodiversity and cultural and social development, especially in a world threatened by a major loss of biodiversity, by climatic change likely to cause upheavals in farming, and where development is not simply seen as copying the industrialized world. But even in the United Kingdom there are many small ventures, mostly operating outside the mainstream, attempting to rescue or rediscover TK relating to food production.

Indeed, as Terry Marsden argues, what is at stake at present, especially with the advent of genetic engineering, is to rethink the kind of agricultural system(s) society wants and the goods it wants it to deliver (GEC, 2000).<sup>15</sup> Without an appropriate agricultural development policy – and most governments tacitly, if not explicitly, favour adoption of industrialized types of farming and pursue policies that will sooner or later squeeze out traditional farmers – the prospects for the production and sale of TK-based products are very limited. Development of TK-based production requires a legal, regulatory and policy framework that supports and strengthens it.

### ***TK as biodiversity***

TK-based farming systems are also an aspect of biodiversity itself. The communities practising farming using such systems would seem to have a right under the CBD to be sustained; while they should be free to abandon their way of life, they should not be forced to do so and should be supported in maintaining and enhancing it, if they so desire. Moreover, as David Downes and Sara Laird point out, “Traditional knowledge is also important to its holders as an integral part of their cultural heritage. As such, its protection is important for ensuring the enjoyment of the right to maintain and take part in cultural life recognized under international human rights instruments.”<sup>16</sup>

### ***As custodian of agrobiodiversity***

A key aspect of TK-based approaches to food production lies in their potentially greater value in ensuring that agro-biodiversity is maintained, in promoting sustainability, in offering alternatives to a dominant, all-encompassing approach and in providing a satisfying way of life for millions of people if they are suitably supported and rewarded. The major way to support the livelihoods of farmers and communities operating with TK is unlikely to be through the use of IPR. More important is likely to be a shift in agricultural development policy to focus on supporting that kind of agricultural development.

### ***As sources of innovation***

To date, too little attention has been paid to TK-based systems as sources of innovations – innovations that have a great potential to benefit other communities and farmers in similar situations. Some people are acting to facilitate an exchange of this knowledge, such as those involved in the Honey Bee Network in India (Gupta, 2000). Here the most advantageous use of TK is probably to share among the range of communities practising TK-based agriculture –

and to ensure it cannot be captured by private interests, possibly by creating an innovations register – although this has pluses and minuses (Downes and Laird, 1999b).

The long-standing approach of agricultural extension, which seeks to share information freely among small farmers to allow them to improve their farming practices, is more likely to benefit resource-poor farmers than having the information locked up in IPR – but only if the extension arrangements recognize and support TK. Agricultural extension and research would need to accept the need to marry TK's innovative capacity and farming activities with modern scientific and technical knowledge to help increase the effectiveness of TK-based farming and food production systems. There is much debate about whether and in what way modern biotechnology might support or undermine this marriage.

Whether this sharing approach is appropriate for the commercial use of TK by others, or by those developing products in the intensive system, is more debatable. Here TK may be an input into something commercialized, and in that case the holders of the knowledge should be rewarded. Since this knowledge is often communal, existing instruments for protecting IPR may not be able to provide particularly appropriate mechanisms, as they protect individual rights, not communal rights – although there is considerable debate about this. It does mean, however, that at a minimum patent applications, for example, should include a declaration of geographical origin and use of indigenous knowledge. This requirement is worth introducing now, even though there may not be agreed benefit-sharing mechanisms yet, as it would result in the creation of a baseline of information that would be useful for assessing to what extent such TK is used in commercial applications of patented products and processes.

However, the value of this material (e.g. farmers' varieties and land races, local water capture methods, companion planting practices and use of these in the modern food system) may well be completely undercut by the expansion of industrialized approaches to farming and developments in biotechnology.<sup>17</sup> The seed industry sees no immediate need for it, having easily accessible resources in gene banks. Moreover, the new life sciences companies taking over seed companies suggest that if natural materials are overpriced or difficult to access, they will simply speed up their use of biotechnology to transfer or invent genes to achieve their desired goals.<sup>18</sup> As functional genomics reveals more about how genes work and subsequent work increases the ability of scientists to manipulate them, the natural base of the food system is likely to be superseded.

## Using IPR

Today, the major actors in the food system use a mix of IPR in pursuit of their commercial goals. The nature of the mix depends on the size and type of enterprise. The new biotechnology-based agricultural firms strongly favour the use of patents to ensure exclusive use of their innovations. They also may try to get either broadly defined patents on key processes or enough patents to achieve what those in the patent business call "clustering" – building enough patents, preferably interlocking one, around a product to prevent others from getting into the field – or "bracketing", which involves surrounding a competitor's patent with so many of one's own that it cannot be commercialised (Dutfield, forthcoming).

Competing in the patent game requires considerable resources – both to take out and to maintain patents – and legal expertise to defend acquired patents. Unless a patent can be defended, at least in the major markets, it is useless. Most small players are looking for larger companies to license their inventions or buy them out in order to acquire rights to the patent portfolios they hold. Here some kind of partnership with a national body, or else a requirement that government help communities to establish and defend rights and prevent them from being usurped, is required, as indeed seems to be happening to some extent in India, where government agencies have challenged patents awarded in the United States.

However, this does not seem a promising route for TK supporters. Other kinds of instruments may be needed to protect their knowledge (as Cottier and others have suggested), in addition to the exclusion of plants and animals from patentability, contrary to what is allowed by TRIPS. It is also likely that a *sui generis* approach to plant variety protection, differentiating



between the TK and commercial sectors, would be more appropriate than the UPOV model, as work by the International Plant Genetics Research Institute suggests.

### ***Trademarks and geographical indications***

Many companies make strong use of trademarks and brands and invest substantial resources in marketing to secure their markets. Greater efforts by them to protect brands are increasingly likely, as the case of Unilever makes clear. In urban societies served by multiple retailers and saturated by advertising and media images, normally only the top two or three brands of a product make it to store shelves. Another possibility for companies is to become generic producers for others, notably the retailers themselves. In such cases the retailer supplies the brand name and the producer's role shifts to that of an unknown, contracted supplier. For some products (Coca-Cola being perhaps the most famous), a combination of branding (trademarking) and trade secrets can be used. In other cases, one can develop a certification scheme to show that the people supplying the good have followed a particular practice (e.g. organic production methods or artisanal methods).

For other groups of producers, making a product in a particular way or in a designated region provides marketing tools that allow them to capitalise on the product's uniqueness. These geographical indications can be quite important in selling food (e.g. Roquefort cheese or Parma ham) and are a contentious issue in the WTO. Such designation normally arises from of a well-established activity that has national recognition and produces products sought after by consumers.

These issues have been well explored by Downes, Laird et al. (1999a, 1999b) along with five case studies of what are essentially potential niche products (e.g. products based on kava, quinoa, and neem).<sup>19</sup> One tends to agree with their conclusions that "both geographical indications and trademarks show the greatest potential where traditional small-scale production is still present, on the supply side, and where end-use products are marketed directly to consumers. In other words, they are less likely to be appropriate when the product is a commodity traded primarily in bulk. Most promising are commodities where at least part of the market is significantly segmented. Markets for specialty food, beverage, and medicinal products are among those where consumer taste and preference has great impact. In recognition of this potential, certification schemes relating to organic, environmental or social responsibility criteria have been developed for bananas, coffee, cocoa, and other products" (Downes and Laird, 1999a).

### ***Niche markets, or TK sustainable farming systems***

Within the current approaches, it seems likely that a limited range of TK-based farming systems may be developed and used to serve particular market segments in the overall global food system, for those consumers at home and abroad who want to support the values and production systems of TK-based communities. With the Fair Trade Mark (developed by a trading organization founded by several development NGOs), one establishes links with specific communities, which receive a greater return for their produce than they would if they sold their goods through normal channels. The products are then marketed with a Fair Trade Mark in the developed countries. (The Max Havelaar Foundation has pioneered efforts in this area.) These products tend to be bought by the niche of consumers who are concerned about development issues. The product does have to be able to hold its own, however, as a quality product, since it is competing for shelf space and must make it worthwhile for retailers to stock it.

Of growing concern to consumers in the developed countries, which face the problem of overproduction in food, are the processes by which their food comes to them. By and large, commodity producers want consumers to focus on the product itself, not hidden attributes of its production system. Current global trade rules support the producers' interests by preventing discrimination on the basis of production processes. However, TK systems could capitalize on this consumer concern. Current developments in traceability (e.g. in Sweden), which allow not just supermarkets but shoppers to see where food products come from, might be extended from domestic food safety concerns to create links with communities elsewhere in the world.



### ***New alliances, networks of support***

Fair trade and other schemes that serve niche markets, however, seem unlikely to ensure the survival and enhancement of all TK-based systems. To do this, the schemes need to be accepted and nurtured as part of a broader national development strategy, not simply to serve niche suppliers in a global market. Insofar as the continuation of TK-based production systems and their further development pose a threat to the expansion and dominance of the dominant agricultural development paradigm, those promoting this will seek to eliminate that threat – whether consciously or not. TK-based systems are, in a sense, a major competitor for the societal support that is available for the food system and that currently goes through a complex of producer and consumer subsidies to underpin the current capital-intensive, high-input type of farming, which has little or no room for marginal producers.

Support for development in this area may, however, be available from other alliances. Retailers, which have acquired significant influence over what products are produced and how, and which are quite sensitive to consumer concerns, could develop alliances and direct relations with TK-based production, just as they have taken an interest in organic farming. Presently there seem to be a growing number of possibilities for alliances between TK communities; NGOs involved in fair trade, environmental issues and development; and retailers seeking new products to fill various niches on their shelves. Such alliances could benefit TK communities provided they do not lead to dependence on a single outlet.

This approach involves looking at how food fits into international markets, which may not be the best basis for TK-based systems aiming to provide food and livelihood security for local communities. At the national level, policy makers have to decide what kind of food system they want, and the roles of different sectors and production methods within it.

### **Conclusion and recommendations**

Without fundamental policy changes, trying to use IPR to protect TK is likely, at best, to allow the creation of some niche markets for products arising from TK-based farming systems. For TK-based systems to be successful, the communities concerned need to offer products that fit into the national economy, not to simply rely on uncertain export projects. That means developing the TK-based systems and the products derived and sold from them as part of a national food system that is based on culturally and socially rooted tastes and is able to hold its own in a more and more globalized system. TK communities also need to ensure they are not locked out of the research agenda by the patents and IPR strategies of the major companies and by countries seeking to be the main players in the food system, and that their innovation systems are supported and rewarded. This raises fundamental questions about the current allocation of R&D expenditures and the kinds of questions that research is trying to address.

To improve future prospects for TK-based systems, action is needed in two areas:

- 1) National and international agricultural development policies need to take into account TK-based approaches in their considerations, from economic measures to the use of publicly funded R&D devoted to participative research with TK-using communities that feel they own and can use this R&D to strengthen their innovative capacity and further develop their farming systems
- 2) Where appropriate, IPR need to be used to support TK-based systems in:
  - Establishing a place in national markets through use of geographical indications and trademarks for TK-based products with support to communities for doing so.
  - Requiring patent applications to include a declaration of geographical origin and use of indigenous knowledge.
  - Ensuring that IPRs are not used to bolster market domination and the exclusion of TK-based products from markets.

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## Notes

- <sup>1</sup> For an elaboration of the food system discussion, see Tansey G and Worsley T. *The Food System – A Guide*. London, Earthscan, 1995.
- <sup>2</sup> These are: Agrevo/Plant Genetic Systems, ELM/DNAP/Asgrow/Seminis, Du Pont/Pioneer, Monsanto/Calgene/Delkalb/Agracetus/PBI/Hybritech/Delta and Pine Lane Co., Novartis, and Zeneca/Mogen/Avanta.
- <sup>3</sup> Five of them are private – Cargill and Continental (both United States), Dreyfus (France), Andre/Garnac (Switzerland) and Bunge and Born (Brazil) – but Mitsui/Cook (Japan) is publicly held. In the United States, the world's largest grain exporter, the six companies account for 95 per cent of corn and wheat exports.
- <sup>4</sup> Gurdial Singh Njjar (1996) argues that “the Western, industrial model of innovation is...antithetical to the ethical and social values and needs of many Third World Countries and peoples. It is critical, therefore, to redefine ‘innovation’ in a manner which is protective of the creativity of indigenous peoples”.
- <sup>5</sup> By 1988, according to OECD, in Western Europe as a whole, the sales of just eight firms – Unilever, Nestlé, BSN, Cadbury Schweppes, ABC, United Biscuits, Hillsdown and San W. Berisdorf – made up 70 per cent of the US\$250 billion food and drinks market.
- <sup>6</sup> ‘Percent of Income Spent On Food Holds Steady’ in *Food Review*, UDSA-ERS, July–September 1992: 15 (2): 11.
- <sup>7</sup> See box 8.3 in *The Food System – a guide* and Lewontin RC. *The Doctrine of DNA – biology as ideology*. London, Penguin, 1993
- <sup>8</sup> In the United States, the focus of private agricultural R&D has changed from agricultural machinery and post-harvest food-processing research (about 80 per cent of the total in 1960) towards plant breeding and veterinary and pharmaceutical research. Some 70 per cent of the chemical research related to agriculture is done in just three countries, the United States, Japan and Germany. These figures are based on work going on at the International Food Policy Research Institute led by Phil Pardey .
- <sup>9</sup> Personal communication, GFAR, Dresde
- <sup>10</sup> For example, the Target Group Index gave six attitude groups of women from 15 to 44 years old the following names:
  - *Self Aware* concerned about appearance, fashion and exercise
  - *Fashion Directed* concerned about fashion and appearance, not about exercise and sport
  - *Green Goddesses* concerned about sport and fitness, less about appearance
  - *Unconcerned* neutral attitudes to health and appearance
  - *Conscience Stricken* no-time for self realization, busy with family responsibilities
  - *Dowdies* indifferent to fashion, cool on exercise, dress for comfort
 In *The Food System*, *op cit*: 148-150.
- <sup>11</sup> The aim of food policy should be to equitably ensure a safe, secure, sustainable, sufficient, nutritious diet for all.
- <sup>12</sup> Article 1. It also goes on to say “including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.”
- <sup>13</sup> Article 7 *Objectives*  
The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations”

- <sup>14</sup> (b) Plants and animals other than microorganisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof. The provisions of this subparagraph shall be reviewed four years after the date of entry into force of the WTO Agreement
- <sup>15</sup> See also Marsden T, Flynn A and Harrison M. *Consuming Interests – The Social Provision of Foods*, London, UCL Press, 2000
- <sup>16</sup> See, for instance, Article 27 of the Universal Declaration of Human Rights, and Article 15 of the International Covenant on Economic, Social and Cultural Rights. In Downes DR and Laird SA with contributions by Dutfield G and Wynberg R. *Innovative Mechanisms for Sharing Benefits of Biodiversity and Related Knowledge - Case Studies on Geographical Indications and Trademarks*. Prepared for UNCTAD Biotrade Initiative, 1999
- <sup>17</sup> The spread and sustainability of intensive farming system are questioned by Wood S, Sebastian, Scherr SJ, *Pilot Analysis of Global Ecosystems – Agroecosystems*. IFPRI & WRI, Washington DC, 2000. See also Jules Pretty *The Living Land: Agriculture, Food and Community Regeneration in Rural Europe*. London, Earthscan, 1998 for European experience on some of these issues.
- <sup>18</sup> More or less stated as such by one industry person at the Global Forum on Agricultural Research in Dresden in May 2000.
- <sup>19</sup> This paper should be read alongside the Downes and Laird paper, op cit, for a detailed discussion of GI and TMs.

**PART TWO**

**PROTECTING**

**TRADITIONAL KNOWLEDGE**





# PRESERVING, PROTECTING AND PROMOTING TRADITIONAL KNOWLEDGE: NATIONAL ACTIONS AND INTERNATIONAL DIMENSIONS<sup>1</sup>

Sophia Twarog

Over the past decade, traditional knowledge<sup>2</sup> (TK) has received increasing attention on the international agenda. Factors contributing to this include the recognition of TK's importance in the lives of the majority of the world's population and in the conservation of biodiversity; concerns about the rapid loss of TK and global cultural diversity; concerns about unauthorized and inappropriate patenting and use of TK, with little or no sharing of resulting benefits with the original holders of TK; interest in harnessing the potential of TK for local sustainable development; and increasing attention to indigenous rights.

Many countries and communities worldwide are considering how to best address this issue at the national, regional and international levels. As is apparent from the wide range of interests and concerns listed above, TK is a complex and multi-faceted issue. It is thus being discussed in a range of forums, each with its own perspective and its own area of competence and expertise. This is useful and necessary. However, focusing on one part of the issue and ignoring all the other aspects risks creating a patchwork of particular solutions that in the end do not fit seamlessly together, and that in some cases may partially or wholly cancel out each other's well-intended effects. There is a need, therefore, for a holistic approach.<sup>3</sup>

This paper will touch briefly on the international TK debate, focusing on concerns raised in the context of the World Trade Organization and calls for international protection of TK. The paper's main goal, however, is to outline a menu of possible elements of holistic national *sui generis*<sup>4</sup> systems for the preservation, protection and promotion of TK. An attempt has been made to match TK-related objectives with appropriate tools. This is not an exhaustive list, but rather a starting point for future discussions and ultimately national multi-stakeholder policy dialogues.

## International dimensions

TK has been discussed in a number of international forums. Foremost among these are those related to the conservation and sustainable use of biodiversity, namely the Convention on Biological Diversity (CBD) and the International Undertaking on Plant Genetic Resources for Food and Agriculture (now the FAO International Treaty). TK is also addressed in arenas related to the rights of indigenous peoples (the International Labour Organization, the United Nations Commission on Human Rights and the United Nations Permanent Forum on Indigenous Issues), intellectual property (the World Intellectual Property Organization, or WIPO) and culture (the United Nations Educational, Scientific and Cultural Organization). More recently, TK has become a topic of discussion in trade-related forums such as the WTO and UNCTAD.

TK is a very complex issue, and each forum allows focus on a particular facet. However, there is some risk of confusion or lack of coordination among forums and agencies. Developing-country governments in particular may find that they cannot be fully engaged in all forums and, thus, must focus on one or two where they think the pay-off will be the greatest. While many consider the CBD to be the forum most sympathetic to their perspective, WIPO has technical expertise on intellectual property rights (IPR) and WTO, with its dispute settlement mechanism, has "teeth".

UNCTAD addresses the issue from the trade and development perspective and can thus have a somewhat more holistic approach. It has carried out a number of activities on TK including an Expert Meeting<sup>5</sup> on TK in 2000, a joint seminar with the Government of India in 2002<sup>6</sup>, and a joint workshop with the Commonwealth Secretariat in 2004<sup>7</sup>.

### ***Traditional knowledge in the WTO***

The Ministerial Declaration of the WTO's Fourth Ministerial Conference (Doha, Qatar, 9–14 November 2001) emphasized the importance of this issue. It instructed the Council for Trade-Related Aspects of Intellectual Property Rights (TRIPS) “to examine, *inter alia*, the relationship between the TRIPS Agreement and the Convention on Biological Diversity, the protection of traditional knowledge and folklore, and other relevant new developments raised by Members pursuant to Article 71.1” (para. 19). In addition, it instructed the Committee on Trade and Environment, in pursuing its work on all items on its agenda, to give particular attention to three issues, including the relevant provisions of the TRIPS Agreement (para. 32).

The TRIPS Agreement sets out minimum standards for a number of IPR instruments (patents, trademarks, copyright, etc.) to protect industrial-type intellectual property. This type of knowledge is predominantly held in developed countries. Some 95 per cent of patents are in developed countries, and a large proportion of the 5 per cent in developing countries is held by developed-country companies. On the other hand, developing countries are well endowed with TK. The nature of this knowledge (it is often held collectively, passed down orally from generation to generation, etc.) makes much, if not most, of it difficult to protect using the conventional IPR instruments required by the TRIPS Agreement. Thus there exists an imbalance whereby the knowledge predominant in developed countries is protected, while that predominant in developing countries is not.

Moreover, there are concerns that the genetic resources and TK of developing countries are often used commercially and/or patented in developed countries with little or no benefit to the owners of the genetic resources (the sovereign States, as per the CBD) or the TK, and without their prior informed consent (PIC). With the TRIPS Agreement being implemented in ever more WTO member States, there are concerns that this situation will only be exacerbated, to the detriment of developing countries and the holders of TK.

The need for protection of TK at the international level has broad if not unanimous support from developing-country governments, since protection at the national level would have little effect beyond national borders.<sup>8</sup>

Initially, the focus has been on measures to prevent the misappropriation of TK. To this end, developing countries have repeatedly sought to amend the TRIPS Agreement so that applications for patents relating to biological materials or to TK would provide, as a condition to acquiring patent rights, (a) disclosure of the source and country of origin of the biological resource and of the TK used in the invention; (b) evidence of prior informed consent through approval of authorities under the relevant national regimes; and (c) evidence of fair and equitable benefit sharing under the national regime of the country of origin. This would provide a legally binding defensive protection against “bad patents” based on misappropriation of genetic resources and TK, and would facilitate benefit sharing.<sup>9</sup> In the medium term, this could be complemented by other measures, such as searchable databases of TK in the public domain to assist patent examiners in determining the existence of prior art.<sup>10</sup>

Nevertheless, these defensive measures would not prevent biological resources or TK from being acquired inappropriately and used commercially, simply without being patented. It also would not address a range of other important TK-related aspirations and objectives. Positive protection is also needed. Hence, as a longer-term solution, there have been many calls from the developing world and others for a binding international *sui generis* system for the protection of TK. A plausible option would be the development of an international framework that would recognize protection of TK at the national and regional levels. However, there is a need for further work on what such an international framework could look like.

These points were emphasized in the Communiqué issued by the representatives of 14 developing-country governments who participated in the seminar on TK organized jointly by the Government of India and UNCTAD in April 2002 (see Appendix V) and in the submission by Brazil on behalf of a group of developing countries to the TRIPS Council in June 2002.<sup>11</sup>

## Preserving, protecting and promoting TK at the national level

Many countries are currently debating how to best deal with the preservation, protection and promotion of TK at national and sometimes regional levels. In this context, it must be noted that there are considerable differences among countries with respect to TK. Thus it is unlikely that a “one size fits all “ approach would be able to adequately take these differences into account (although there may be a set of minimum elements on which most countries could agree). Countries may therefore wish to develop national TK protection systems tailored to their specific circumstances and priorities. Such systems may be referred to as *sui generis* systems for the protection of TK.

### Assessment

For countries interested in developing national TK protection systems, a good first step could be to assess the current situation in the country. Questions that could be asked in this context include:

- What are the main types of TK in the country?
- Who are the TK holders?
- Are some parts of the TK shared by several communities or tribes? If so, what is the relationship between these groups?
- How is TK transmitted among TK holders and intergenerationally?
- What role do customary laws play?
- Are certain bodies of TK in danger of being lost? If so, what are the main underlying reasons for this?
- What efforts have been made to document TK?
- In what ways are TK and TK-based products being used commercially?
- Is TK currently being accessed by third parties? If so, in what manner? Are the TK holders reaping benefits from this? Are there cases of inappropriate use?
- What is the level of awareness of the value of TK in the country?
- What is the current legal and institutional framework affecting TK?
- Who are the main stakeholders interested in the issue? These could include TK holders (individuals, communities, tribes, traditional practitioner associations, etc.), government officials (in ministries of environment, trade, intellectual property, indigenous affairs, health, tourism, development, etc.), non-governmental organizations, research institutes, health care facilities and private-sector entities.
- How do these stakeholders currently interact?
- What are the main TK-related concerns and objectives expressed by these different groups of stakeholders?

In most countries, current legislation and policies on this subject are fragmented at best and often non-existent. There are pieces of legislation in areas related to biodiversity, forestry, intellectual property, indigenous rights, human rights, and so on that have a bearing on the subject, but these have generally been developed with other objectives foremost in mind and do not yield a coherent approach. Thus, in each country, there is a need to look at these existing pieces to see how they fit together and what gaps remain.

### Objectives

A next step is to share the assessment findings with a wider group of stakeholders and try to reach a common and clear understanding of the main objectives the country’s *sui generis* TK system should try to address. Ideally, this should be discussed in a multi-stakeholder dialogue, in which the full participation of TK holders is ensured. Such discussions may not be easy, as it is likely that different stakeholders will have different priorities. However, such a process is important to make sure that the range of views and aspirations is heard and to develop a broad-based sense of involvement and ownership in whatever system is ultimately developed.

There are many different possible objectives related to TK. Many of these specific objectives can be grouped into three broad categories: preservation, protection and promotion.<sup>12</sup> In countries where TK is being rapidly lost, the *preservation* of TK may be of key importance. This

may in turn be connected to the conservation of biological diversity and the rights of indigenous peoples. Some countries may choose to focus on *protection*, specifically on preventing the filing of “bad patents” at home or abroad or the unauthorized commercial use of TK. Others may be mainly interested in the *promotion* of TK and harnessing its potential for development, including through commercialization and benefit sharing.

For each objective, there are a number of tools that can be employed. There is, of course, some overlap, with some tools being useful for more than one objective; in some cases there may be tensions between certain aspects of different objectives. For example, to promote the use of TK, free and uninhibited sharing of this information might be best. This could clash with intellectual property protection, which would restrict the wider use of TK. The interconnections between the various facets of the TK issue underline the importance of a *holistic* approach to the development of *sui generis* systems for TK.

## **Tools**

The following text lists possible tools that could be used for each of the three broad categories of objectives outlined above: preservation, protection and promotion. The list is not exhaustive, but is intended as a starting point for future research and discussion and eventually national multi-stakeholder policy dialogues.<sup>13</sup>

### *Preservation*

TK is currently being lost at an alarming rate.<sup>14</sup> There are a number of possible measures for preserving TK. First, it is important to understand the root causes of the TK loss in each country. Often the process begins with destruction of the natural environment, which in turn disturbs and even destroys the indigenous and local communities embodying traditional lifestyles which are the main holders of the TK. Recognizing the rights of these communities to their traditional lands could help slow this detrimental trend. Often such communities start to decline owing to poverty, in which case strengthening their economic opportunities is an appropriate response. Sometimes, the communities’ youth no longer feel proud of their heritage and way of life, considering it to be old-fashioned, and thus have little incentive to be recipients of the TK held by the elders. In that case, raising awareness of the value of TK and of the cultural heritage may help.

The above measures are aimed at enhancing “in situ” preservation – that is, the preservation of TK as a living, evolving body of knowledge. Steps can also be taken to preserve TK in an “ex situ” manner, namely through TK documentation, registries or databases. This can be particularly important for knowledge that seems likely to be lost in the near future. However, TK registries can also play a role in helping to keep the knowledge alive in the communities, by providing a modern-day approach for youth to assimilate the knowledge. More experience needs to be acquired and analysed in this area.

With TK registries, determining access rights is of key importance. There are some concerns that registries may, in effect, roll out the red carpet for bio-piracy or TK piracy. For the moment, keeping the registries as the property of the communities and governing access in line with customary access rights to the knowledge may be advisable. This is particularly true for TK not commonly known outside the community.

The TK database of the Tulalip tribe in the United States is an interesting initiative, as it enables access to each information field to be limited to certain groups of users. For example, community youth may have access to one subset of knowledge, community traditional healers to another, and researchers from outside the community to still another. The database is actually distributed among the different communities of the tribe, thus giving full local control.

### *Protection*

Another set of policy objectives aims to prevent unauthorized or inappropriate use of TK by third parties. This includes unauthorized commercial use as well as applications for IPR that are based on TK but are made without the PIC of the TK holders and without benefit sharing.<sup>15</sup>

Intellectual property protection can be categorized as defensive (preventing others from seeking IPR to one's TK) or positive (establishing IPR to one's TK, with the resulting possibility of preventing others from using the TK without permission).

For both types of protection, there have been cases where TK holders have been able to use conventional IPR instruments to protect their TK.<sup>16</sup> However, since these instruments were not developed with TK in mind, but rather modern industrial intellectual property, the fit is not always perfect.

For TK holders, most of whom have quite limited resources, enforceability of IPR will always be a major problem. This fact must always be borne in mind when designing TK protection systems.

#### *i) Defensive protection of intellectual property*

A main tool for defensive protection is requiring relevant patent applications to include disclosure of the source of genetic resources and associated TK, as well as evidence of PIC and benefit sharing. A few countries have recently started to do this at the national level. As was mentioned earlier, developing countries have also repeatedly proposed at the international level to include this requirement in the TRIPS Agreement. Such a measure would facilitate traceability and benefit sharing.

For TK that is clearly in the public domain (e.g. Ayurvedic texts), making this information available to patent examiners around the world in an easily searchable format, such as a database, could help establish the existence of prior art and therefore prevent the granting of "bad patents". This is what India proposes with its TK Digital Library. However, there are still discussions concerning the definition of *public domain* and also what to do about TK that may have been released into the public domain without the PIC of the original TK holders.

#### *ii) Positive protection of intellectual property*

Bad patents are only one piece of the puzzle. Many TK-holding communities complain that their knowledge and cultural heritage are treated as common property and as free for commercial use by anyone anywhere. Often such use is not patented, and therefore defensive protection measures such as those outlined above would have little impact. These communities would like to exert their claim to their knowledge and to have this recognized in national and international law.

A legislative tool that could lay the foundations for this would be a declaration of the rights of indigenous and local communities, including their ownership of their TK.

Another tool would be the recognition of customary laws in national legislation. In most TK-holding communities, the use of TK is governed by a wide variety of customary laws. Within the communities, this approach may work well. However, outside the communities, the laws have little effect, unless they are recognized in national legislation or the formal judicial system. This approach is widely supported by indigenous and local communities, as it respects their values and beliefs and allows them to continue their traditional lifestyles.

The use of a tort of misappropriation, whereby remedies can be sought for the unauthorized, improper or unlawful use of property for purposes other than that for which it was originally intended, is another tool that could be further explored. Such a tort exists, for example, in the United States.

Another possible tool is the creation of a *sui generis* TK database, where putting TK into the database actually constitutes establishing a legal claim over the TK. This idea also merits further exploration.

### *Promotion*

The promotion of TK relates broadly to the harnessing of TK for trade and development. Several objectives could be included under this framework: promoting the use and further development of TK systems and TK-based innovations; promoting appropriate and sustainable com-



mercialization; and ensuring that a fair and equitable share of the benefits resulting from the use of TK is captured by the TK holders.

*i) Promoting the use and further development of TK systems*

It must first be recalled that TK has the greatest value to the TK-holding communities themselves. Many of them rely on TK for their very survival, particularly poor rural communities in developing countries. Thus, any measures that can strengthen and further develop this base of knowledge on which the communities depend will facilitate their movement along their own unique path of development.

To promote the further development and use of TK, promoting local exchange and adaptation of TK can play an important role. One tool actively promoted by the World Bank Indigenous Knowledge Programme is “community-to-community exchanges”. The IPR implications of these may still need to be worked out (for example, there might need to be an agreement that shared information is not then passed on to a third party). However, this has been shown to increase the knowledge bases of both communities involved and to lead to new ideas and solutions to common problems.<sup>17</sup> The Honeybee Network in India is another interesting initiative promoting grassroots TK-based innovation through TK documentation and dissemination. Measures aimed at enhancing the capacity of national and regional TK networks – for example by facilitating communication – could also be quite useful.

Another tool is promoting the integration of TK into national development strategies and development projects.<sup>18</sup> Involving TK holders in the early stages of development projects will help ensure that the project is well suited to local realities and takes advantage of local TK resources, including knowledge of the environment, local materials, appropriate technologies, and so on. Often, local TK can be leveraged by global knowledge for increased project effectiveness and sustainability.<sup>19</sup>

Several papers presented at UNCTAD’s Expert Meeting on Traditional Knowledge in 2000<sup>20</sup> also stressed the importance of interaction between traditional practitioners and the world of “modern” science. This interaction can lead to innovations on both sides. An example is the Seeds of Survival Program in Ethiopia, where traditional land races were selected and bred in cooperation with traditional farmers to produce a set of elite land races that were particularly well suited to the climatic conditions in Ethiopia and outperformed “green revolution” varieties. Several countries have noted positive experiences with having traditional healers in hospitals to interact with medical staff. The importance of government proactivity was also emphasized.<sup>21</sup>

In some cases, the patent system can be used to promote TK-based innovations. This seems to have worked in China, for example, where the main body of traditional medicine has been codified and in the public domain for centuries and is thus not patentable. China has developed specific legislation for patenting new traditional medicines and herbal remedies. Use of this option has been growing rapidly.<sup>22</sup>

TK registries may also play a role in promoting the use of TK, just as they may promote its preservation. They could also be used for commercialization (dealt with in the following section), to get an idea of commercial possibilities. Access to carefully designed<sup>23</sup> registries could be governed by contractual obligations.

*ii) Commercialization*

Commercialization is a sensitive subject for some TK holders. Many TK holders are not as interested in commercializing the TK themselves as in preventing the inappropriate commercial use of it by others (see the earlier discussion here). Generally, TK was not developed with commercial purposes in mind, but rather for local use within the community. Much TK is not an appropriate subject for commercialization, particularly that with special spiritual or cultural significance.

For TK holders interested in exploring commercialization, the first step is to decide which parts of their TK are off limits and which are not. A next step is the identification, within the latter category, of TK that may have value in the marketplace. Potential customers could include



community members, local markets, people originally from the community who have now moved to cities, and customers in foreign markets.

It should be pointed out that commercialization of TK often refers to the commercialization of a TK-based or TK-derived product – a tangible good or service where TK is the “know-how” involved in its production.

Commercialization can be done by third parties, with a share of benefits going to the communities; as a partnership between the communities and third parties; or by the communities themselves. In general, the more involved the community is in developing, producing and selling the product, the larger the share of the market value that will accrue to it. The more funds come into a community, the more likely it is that the community will be vibrant and that the TK held by that community will be preserved and further developed.

Thus, it is very important to promote community-based development. The tools for such development are not exclusive to the domain of TK. They cover a range of measures to promote small enterprise and informal sector development, such as access to finance (including microcredit); assistance in identifying market opportunities; scaling up operations, marketing, and export; and promoting the formation of producers’ associations to create economies of scale and create more bargaining power in obtaining inputs at lower prices. Partnerships with larger entities in the country’s formal sector or in foreign markets can play an important role.<sup>24</sup>

One area where commercialization has particularly significant potential is traditional medicine. Particularly for Asia, this is a rapidly growing market. Asia is globally the main exporter of medicinal plants and herbal remedies. Measures can be taken to promote the increased involvement of traditional communities in this industry – for example, through the cultivation and first-degree processing of medicinal plants. Some communities in Viet Nam, for example, have become specialized in exactly such industries.<sup>25</sup>

Governments have an important role to play in setting up a conducive environment for the traditional medicine industry. This includes creating regulatory frameworks for ensuring the quality, safety and efficacy of these medicines; measures encouraging a sustainable supply of raw materials for industry (including prevention of over harvesting of wild resources and cultivation of medicinal plants); and measures relating to export promotion.

In some cases, conventional IPR instruments may increase the commercial value of TK-derived products or help protect successful products from unauthorized copying or use by third parties. This concerns, for example, the use of trademarks and geographical indications (GIs). For example, in the United States, “Made by American Indians” is a registered mark, and those who falsely represent their products as having been made by American Indians can be fined or sent to jail. There may be certain areas where GIs could capture the traditions involved in making certain products. In this case, national intellectual property offices could take steps to set up GI registers. However, the GI or trademark must be recognized by the final consumers in order to increase the product’s value. While “Darjeeling” may be well known, many developing countries have few potential GIs that would enjoy such recognition in global markets.

### *iii) Benefit sharing*

Benefit sharing is a theme that runs through all facets of TK protection. Benefits accruing to communities enable them to continue their traditional lifestyle and thus preserve TK. Protection of TK also has benefit sharing as one of its underlying objectives. In harnessing TK for trade and development, benefits to the TK holders are central.

Some means of benefit sharing have already been elaborated above (e.g. disclosure of source of origin). Contracts have also been used as a tool for capturing benefits. This has the advantage of being a readily understood business practice, but the disadvantage of involving bargaining power disparity.

Biodiversity-related TK could be specifically included in national policies and institutional arrangements on access to genetic resources and benefit sharing. The Convention on Biological Diversity stipulates that access to genetic resources should be based on PIC of the member State and mutually agreed terms (MAT) with benefit sharing. For TK associated with such

resources, the national access and benefit-sharing regime could also stipulate that PIC of the TK-holding communities (where these can be clearly identified) should be sought in accordance with their customary laws and on MAT, including benefit sharing. Where TK holders cannot be clearly identified or the TK is more or less in the public domain, fees could be paid by the interested party into a community development fund, as in Peru.

## Conclusion

This discussion has presented a possible initial approach that could be taken at the national level by countries interested in addressing TK issues. A suggested first step is to assess the current TK-related situation in the country, including, for example, determining the main types of TK, who the TK –holders are, how the TK is being used, what are the current policies and institutional frameworks, and who are the main stakeholders and interested parties. The next step could be to have a national multi-stakeholder policy dialogue (with full participation by TK holders) in order to share the assessment findings and discuss the objectives that a national *sui generis* system should address. For each of three broad categories of TK-related objectives – preservation, protection and promotion (harnessing TK for development) – the discussion outlined a number of possible policy tools and measures. This non-exhaustive menu of options is intended to serve as a starting point for further exploration and discussion. A holistic approach to the problem is essential.

The discussion has also examined some of the concerns expressed at the international level regarding TK. Many calls have been made by developing countries and others for international TK protection, since national policies have limited effect beyond national borders. Two proposals worth examining are the “defensive” proposal for requiring patent applications to include the disclosure of the origin of genetic resources and TK, as well as evidence of PIC and benefit sharing; and the “positive” proposal for an international framework that would recognize national and/or regional *sui generis* systems.

Further work is needed at both levels: elaboration of elements of national systems as well as international solutions. From the development perspective, the ultimate solution to the multi-dimensional TK challenge will lie in a combination of multi-faceted measures at the national and international levels.

## Notes

- <sup>1</sup> An earlier version of this report was first published in *Progressing towards the Doha Development Agenda: Selected Papers on Trade and Development Research Issues for Asian Countries*, Inamo and Xuto, ITD and ADB (2003).
- <sup>2</sup> For the purposes of this paper, traditional knowledge or TK refers to the “knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles” as well as “indigenous and traditional technologies” (Convention on Biological Diversity, Articles 8(j) and 18.4).
- <sup>3</sup> While at the moment no international forum is perfectly suited to a holistic discussion, at the national level countries do have an opportunity to approach the problem in a holistic manner.
- <sup>4</sup> The term *sui generis* means “of its own kind”. A *sui generis* system for TK protection should not be confused with the *sui generis* system for plant variety protection stipulated in TRIPS Article 27.3(b), although the two may be related.
- <sup>5</sup> The UNCTAD Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices was held in Geneva from 30 October through 1 November 2000. The background note by the secretariat (TD/B/COM.1/EM.13/2) gives a good overview of the subject, including information on the importance of TK and means for its protection and the harnessing of its potential for development. The outcome of the Expert Meeting is contained in document (TD/B/COM.1/EM.13/3). Both are available on the UNCTAD website at [www.unctad.org](http://www.unctad.org). See also appendices II, III, and IV.
- <sup>6</sup> Please see the report of the International Seminar on Systems for the Protection and Commercialization of Traditional Knowledge, which was organized by the Government of India and UNCTAD (New Delhi, 3–5 April 2002). The report is available on the UNCTAD website at [www.unctad.org/trade\\_env](http://www.unctad.org/trade_env).
- <sup>7</sup> The papers prepared for the UNCTAD - Commonwealth Secretariat Workshop on Elements of National *Sui Generis* Systems for the Preservation, Protection and Promotion of Traditional Knowl-

- edge, Innovations and Practices and Options for an International Framework, and the workshop report are available on the UNCTAD Website ([www.unctad.org/trade\\_env/TK2.htm](http://www.unctad.org/trade_env/TK2.htm)), and are being compiled for a joint UNCTAD-Commonwealth Secretariat publication.
- <sup>8</sup> See, for example the outcome of the UNCTAD Expert Meeting, TD/B/COM.1/EM.13/3, in Appendix III and numerous interventions and submissions in the CBD, WTO and WIPO.
- <sup>9</sup> In Decision VI/24, part C, the sixth Conference of the Parties of the CBD (April 2002) invited Parties and Governments to encourage disclosure of the origin of genetic resources and TK in relevant applications for IPR. (see UNEP/CBD/COP/6/20). It is also worth noting that, for the fifth session of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (IGC), the WIPO secretariat prepared a draft technical study on disclosure requirements (WIPO/GRTKF/IC/5/10).
- <sup>10</sup> Note that the burden is shared differently for these two options. In the disclosure option, the burden of proof is on the patent applicant, who presumably knows the source of the material used and could provide evidence of PIC and benefit sharing, if in fact he or she had followed such procedures. There would also be an additional cost involved in making the necessary changes to the patent laws or application procedures in the countries concerned. For the TK registry-based option, the main burden would be on TK holders to create registries (which can be quite resource-intensive work), with a smaller burden on patent office examiners to also search the databases made available to them.
- <sup>11</sup> *The Relationship between the TRIPS Agreement and the Convention on Biological Diversity and the Protection of Traditional Knowledge*, submitted by Brazil on behalf of the delegations of Brazil, China, Cuba, the Dominican Republic, Ecuador, India, Pakistan, Thailand, Venezuela, Zambia and Zimbabwe in June 2002 (IP/C/W/356).
- <sup>12</sup> There may of course be objectives that do not fall easily into these categories or that deserve more careful consideration by themselves. There may also be some objectives, such as equity and benefit sharing, that fall into all three categories.
- <sup>13</sup> When discussing these different options, resource implications must always be borne in mind.
- <sup>14</sup> For example, it is estimated that in the next 100 years, 90 per cent of the world's languages, which are carriers of culture and TK, will become extinct. For further information, please see the chapter "Importance of Traditional Ecological Knowledge and Ways to Protect It" by Gonzalo Oviedo, Aimée Gonzales and Luisa Maffi in this book or visit the UNCTAD website at [www.unctad.org/trade\\_env](http://www.unctad.org/trade_env).
- <sup>15</sup> For example, there are a number of cases where medicinal plants used by local and indigenous communities have attracted the interest of researchers and pharmaceutical companies, resulting in commercially successful patented drugs. The communities have rarely gotten any benefits in return.
- <sup>16</sup> A number of these are presented in documentation prepared for the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore. See for example WIPO/GRTKF/IC/5/7.
- <sup>17</sup> See the chapter "Indigenous Knowledge for Development: Opportunities and Challenges" by Nicolas Gorjestani in this book.
- <sup>18</sup> For more information, see Alan Emery (2000), *Integrating Indigenous Knowledge in Project Planning and Implementation* (Canada, KIVU Nature Inc.). The book is also available from the IK Programme of the World Bank.
- <sup>19</sup> Gorjestani, *op. cit.*
- <sup>20</sup> See 'meetings' at [http://www.unctad.org/trade\\_env/](http://www.unctad.org/trade_env/)
- <sup>21</sup> See for example the papers by Tesfahun Fenta (Ethiopia), Le Quy An (Viet Nam), Zehirin Dakuyo (Burkina Faso), Paul Mhame (Tanzania) in this book or as presented at *UNCTAD's Expert Meeting on Systems and National Experiences for the Protection of Traditional Knowledge, Innovations and Practices*, available under "meetings" on UNCTAD's Website at [www.unctad.org/trade\\_env](http://www.unctad.org/trade_env).
- <sup>22</sup> See Zheng Yongfeng, "The Means and Experiences of Patent Protection of Traditional Medicine in China", presented at the International Seminar on Systems for the Protection and Commercialization of Traditional Knowledge organized by the Government of India and UNCTAD in New Delhi, 3–5 April 2002.
- <sup>23</sup> For instance, a database for these purposes might indicate the general type of commercially interesting TK and contact information for relevant TK holders.
- <sup>24</sup> For more information on these topics, see UNCTAD's body of work on promoting small and medium-sized enterprise development.
- <sup>25</sup> See Nguyen The Vien, "Basic Issues in Developing, Growing, Tending, Processing and Utilizing Medicinal Plants as a Sideline Occupation in a Traditional Village in Viet Nam", in *Greening Trade in Viet Nam*, Veena Jha, Ed., UNCTAD (2001).



# THE IMPORTANCE OF TRADITIONAL ECOLOGICAL KNOWLEDGE AND WAYS TO PROTECT IT

Gonzalo Oviedo, Aimée Gonzales and Luisa Maffi

## Introduction

Traditional ecological knowledge,<sup>1</sup> also known as traditional knowledge (TK),<sup>2</sup> comprises indigenous and other local peoples' knowledge and beliefs about the natural world, their ecological concepts and their natural resource management institutions and practices. It is a fundamental component of cultural adaptation to natural conditions.

Ethnobiologists and other scientists have extensively documented TK. This work has demonstrated the in-depth nature of TK and its value for environmental sustainability. In many cases, TK was found to be more complete and accurate than Western scientific knowledge of local environments. TK can provide a longterm perspective on ecosystem dynamics, based on ancestral knowledge and interaction with habitats and species, and thus assist in the analysis and monitoring of long-term ecological changes.

This paper points out the correlation between cultural and biological diversity and highlights the extinction crisis for both. It warns that 90 per cent of the world's languages (and by and large the cultures expressed by them) are expected to go extinct in the next 100 years. It describes the results of a joint WWF-Terralingua project that cross-mapped the locations of indigenous peoples onto the world's ecoregions. It describes TK-related discussions in several international forums. Finally, the paper argues that two distinct types of actions are required to address the problems that TK is currently facing: (a) those that prevent loss and erosion of knowledge and (b) those that protect rights to knowledge through legal instruments. It also argues that the two types of actions should be pursued simultaneously.

## Traditional ecological knowledge and the correlations between cultural and biological diversity

As recognized in the World Wildlife Fund's Statement of Principles on Indigenous Peoples and Conservation (WWF 1996), many of the areas of highest biological diversity on the planet are inhabited by indigenous peoples. Indeed, the correlations between biological and cultural diversity observed locally are borne out on a global scale in studies comparing the geographical distribution of the world's species and languages (Harmon 1996, 1998). In these studies languages are considered to be the carriers of many cultural differences – indeed, “the building blocks of cultural diversity, arguably the fundamental ‘raw material’ of human thought and creativity” (Harmon 1996), and to “allow a comprehensible division of the world's peoples into constituent groups” (Harmon 1998). If one takes species richness and language richness (numbers of species and languages) as convenient (and intuitively valid) approximations to the full gamut of variation implied in the concepts of biological and cultural diversity, a striking overlap can be observed between countries with high endemism for vertebrates, flowering plants and birds, and countries with high numbers of endemic languages (i.e. as with species, languages restricted in range to a single country). The data are summarized in Table 1, which also shows that 10 of the 12 megadiversity countries figure among the top 25 countries for endemic languages as well.<sup>3</sup>

Harmon (1996) points to several geographical and environmental factors that may affect both biological and linguistic diversity, and especially endemism, such as extensive land masses with a variety of terrains, climates and ecosystems; island territories, especially ones with internal geophysical barriers; and tropical climates, which foster higher numbers and densities of species.

Following the definition of the International Labour Organization's Convention 169 on Indigenous and Tribal Peoples in Independent Countries (ILO, 1989),<sup>4</sup> it has been estimated that

**Table 1: Endemism in Language compared with rankings in Biodiversity<sup>6</sup>**

Country	Rank				On mega-diversity list
	Endemic languages	Endemic vertebrates	Flowering plants	Endemic bird areas	
Papua New Guinea	1	13	18	6	
Indonesia	2	4	7	1	Yes
Nigeria	3				
India	4	7	12	11	Yes
Australia	5	1	11	9	Yes
Mexico	6	2	4	2	Yes
Cameroon	7	23	24		
Brazil	8	3	1	4	Yes
Dem. Rep. of the Congo	9	18	17		Yes
Philippines	10	6	25	11	
United States	11	11	9	15	
Vanuatu	12				
United Rep. of Tanzania	13	21	19	14	
Sudan	14				
Malaysia	15		14		Yes
Ethiopia	16	25			
China	17	12	3	6	Yes
Peru	18	8	13	3	Yes
Chad	19				
Russia	20		6		
Solomon Islands	21	24			
Nepal	22		22		
Colombia	23	9	2	5	Yes
Côte d'Ivoire	24				
Canada	25				

**Notes:** Figures for Ethiopia include Eritrea. Endemic vertebrate figures for China, Papua New Guinea and the United States do not include reptiles because the number of endemic species is not reported in the source table. Flowering plant species include both endemics and non-endemics. "Megadiversity countries" have been identified as those likely to contain a large percentage of global species richness. The 12 listed were identified on the basis of species lists for vertebrates, swallowtail butterflies and higher plants.

*Sources: Endemic languages: Harmon (1995: 22–28); endemic vertebrates: Groombridge (1992: 139-141); flowering plants: Groombridge (1992: 80–83); Endemic bird areas: Stattersfield et al. (1998). Megadiversity countries: McNeely et al. (1990: 88–90).*



worldwide there are at least 300 million indigenous people (Gray, 1999).<sup>5</sup> This constitutes only about 5 per cent of the world's total population, yet these peoples represent the largest portion of cultural diversity on earth.

If one takes language distinctiveness as a measure of cultural diversity, then it is significant that, according to Durning (1992), 4,000 to 5,000 of the over 6,000 languages in the world<sup>7</sup> (or 67 to 83 per cent of the world's languages) are spoken by indigenous peoples, implying that such peoples constitute most of the world's cultural diversity. As was mentioned earlier, the factors that affect biodiversity, are also thought to increase linguistic diversity by inducing mutual isolation between human populations and thus favouring linguistic diversification, although one also finds numerous cases of both sympatric speciation and what could be defined as "sympatric language genesis".<sup>8</sup>

In addition, an ecological phenomenon – the coevolution of small-scale human groups with their local ecosystems – has been proposed as possibly accounting for biodiversity–linguistic diversity correlations. Over time, as human communities interact closely with the local environment, modifying it as they adapt to life in specific ecological niches, they acquire intimate and specialized knowledge of the environment and how to use and manage it for individual and group survival. This knowledge becomes encoded and is transmitted through the local languages (Harmon, 1996; Maffi, 1998). As Mühlhäusler (1995) puts it: "Life in a particular human environment is dependent on people's ability to talk about it."

### **Mapping indigenous and traditional peoples in the global 200 ecoregions<sup>9</sup>**

The WWF has developed a new conservation approach called Ecoregion Conservation. The central feature of this approach is the selection of the ecoregion as the basic unit for conservation. The WWF defines an ecoregion as "a relatively large unit of land or water containing a geographically distinct assemblage of species, natural communities, and environmental conditions".<sup>10</sup> This approach aims to preserve biodiversity in each ecoregion by maintaining its current pattern and, wherever possible, restoring its earlier patterns. The WWF's choice of ecoregions as conservation units acknowledges the transnational nature of patterns of biodiversity and ecological processes. The WWF's philosophy in this connection is that defining an ecoregion in biological terms "makes sense because an ecoregion encompasses an entire community of species, habitats and ecological interactions. This enables action plans to be prepared that will seek to conserve all the species for the long-term ecological health and biodiversity of a landscape, and integrate these with meeting the needs and aspirations of human societies".<sup>11</sup> It also makes sense "in terms of human communities and how their social and economic circumstances interact with ecological factors. Whether the ecoregion is a large forest, a grassland ecosystem, a river system or a marine/coastal zone, the people who live in the ecoregion often share a common relationship with the land/water and its natural resources".<sup>12</sup>

Ecoregion conservation represents a large-scale integrated approach to long-term biodiversity conservation based on action plans that incorporate ecological and socioeconomic information, along with full stakeholder participation and broad-based partnerships (WWF, 1999). The approach aims to address the fundamental causes of biodiversity loss by looking across whole regions to identify the actions needed to ensure long-term conservation and results that are ecologically, socially and economically sustainable.

In establishing global priorities for the application of ecoregion conservation, WWF adopted the representation approach developed in conservation biology. It identified 238 ecoregions out of an estimated total of about 900 in the world. These 238 ecoregions, known as the "Global 200" (WWF, 1999), were chosen as highly representative of the earth's 19 major terrestrial, freshwater and marine habitat types, using the criterion of "biological distinctiveness".

A project<sup>13</sup> has been undertaken to cross-map the locations of indigenous peoples onto the world's ecoregions, under the assumption that this analysis was likely to show a strong correlation between areas of high biodiversity and areas of high cultural diversity. In carrying out the cross-mapping of indigenous peoples' locations onto the Global 200 map, the main operational criterion was reference to the concept of "ethno-linguistic group". This concept has been used in the literature to define a social unit that shares the same language and culture and

uses the same criteria to differentiate itself from other social groups (Lizarralde, 1993: 11). While in reality one cannot expect to find human societies perfectly matching this theoretical construct, in many cases – especially in small-scale indigenous and tribal societies and other traditional local communities – actual social units do approximate the theoretical ethnolinguistic units. Linguistic affiliation is commonly, if not invariably, one major and salient component of ethnic identification (including self-identification). Often, though by no means always, a group of people calling themselves and their language by the same unique name marks this coincidence of ethnicity and language. A total of 6,867 ethnolinguistic groups were identified by the research described above and plotted on the Global 200 map. Of these, 4,635 groups (or over 67 per cent of the world total) are located in the Global 200 ecoregions. Almost all Global 200 sites (about 95 per cent) show the presence of ethnolinguistic groups.<sup>14</sup>

Tropical environments favour localization and proliferation of small human communities. Therefore, one is also likely to find high “densities” of distinct TK systems in the tropics. This does not mean that human-environment interactions and TK systems are any less significant in arctic or desert ecosystems. Lower numbers of ethnolinguistic groups in arctic and desert environments are explained by the extreme ecological, and therefore subsistence, conditions existing in these environments, which prevent concentration of human populations and require mobility over vast expanses of land. These interactions and TK systems reflect unique adaptations and successful specialization in the use and management of large, harsh, fragile landscapes.

### The extinction crisis

Numerous studies have drawn attention to the fact that a crisis of far greater magnitude than the biodiversity crisis is affecting the world’s diverse cultures and languages. Recent estimates put the impending rates of species extinction on Earth at 1,000 to 10,000 times (UNEP, 1995) or at least four orders of magnitude (Lawton and May 1995) faster than past rates. As a concrete example, a middle-ground prediction for the extinction of seed plant species in the next 3,000 years is 50 per cent. By contrast, estimates for the proportion of native languages (and thus, by and large, the cultures expressed by them) that will have gone extinct or face extinction in the next 100 years are as high as 90 per cent of over 6,000 currently spoken languages (Krauss 1992, 1996). These estimates for plants and languages are compared in Table 2.

**Table 2. Estimates of seed plant extinctions compared to estimates of language extinctions (modified from Cox 1997).**

Biodiversity “Redbook” Data <sup>a</sup>			Language “Redbook” Data <sup>b</sup>		
Estimated seed plant species	250,000	100%	Estimated current spoken languages	6,000	100%
Plant species certified as extinct since 1600	747	0.30%	Estimated languages extinct since 1900	600	10%
Plant species threatened	22,137	8.90%	Estimated languages threatened	2,400	40%
Total extinct or threatened species	22,884	9.20%	Total extinct or threatened languages	3,000	50%
Predicted no. of plant species becoming extinct in 3,000 years	125,000	50.00%	Predicted no. of languages becoming extinct in 100 years	5,400	90%

<sup>a</sup>Plant species data from Smith et al. (1993), Lawton and May (1995).

<sup>b</sup>Language data from Krauss (1992).

Harmon (1992) identifies numerous indicators of the world's cultural diversity, from the use of local languages to ethnic affiliation, forms of social organization, subsistence practices, land management, diet, medicine, and aesthetic and religious manifestations. A preliminary assessment of the status of these indicators reveals a downward trend in all cases. Changes in habitat, restrictions on mobility, alteration of subsistence economies owing to the loss of traditional land rights and the decline in biodiversity, breakdown of social structures, and acculturation are all side effects of the market economy that are threatening the survival of many indigenous people and their cultures.<sup>15</sup>

Thus, as the impact of globalization on the world's cultures increases, the evidence is that both cultural and biological diversity diminish. McNeely (1997) and Posey (1996) argue that these processes affect both indigenous and industrial societies and that the two are in fact interdependent, so that what happens in one is reflected in the other. It is important to secure the rights of indigenous people to control their lands and resources thereby ensuring the maintenance of their "capacity to effectively monitor and control access to and transfer of genetic resources and traditional technologies while enhancing biological diversity" and at the same time reexamine the perceptions and values of people living in the industrialized world.

The loss of TK and practices very often has a direct impact on the environment through changes in land use and resource use patterns that replace traditional systems. It is also associated with deterioration or loss of traditional values attached to lands and resources, weakening the links of individuals to their homelands, and leading ultimately to the disappearance of the "Mother Earth" concept that has often been attributed to indigenous and traditional societies.

More broadly, the loss and erosion of TK means missed opportunities to learn more about local environments from people who have managed them for a long time. The TK of the Karen communities in Thailand (Steinmetz, 1999) showed that local Karen people were able to identify 41 different vegetation communities and habitat types within the landscape they inhabited; they could provide valuable information on the relationships between wildlife populations and habitats. Also, as Steinmetz noted, TK provides a historical ecological dimension that is not accessible to modern conservation biology.<sup>16</sup> Such knowledge is crucial to understanding the ecological processes that sustain local biodiversity. While TK cannot replace scientific knowledge (SK), management practices that rely on integrating SK and TK can provide effective solutions.

## TK in international processes

To what extent has the world come to understand the importance and value of TK, and what responses exist so far to the two-fold problem of its preservation and protection?

Awareness of the potential value of TK, and of indigenous peoples' relationships with local environments for conservation efforts, is clearly expressed in major reports and conventions.<sup>17</sup> For example, 'Caring for the Earth'<sup>18</sup> states of indigenous peoples: *"Their cultures, economies, and identities are inextricably tied to their traditional lands and resources. Hunting, fishing, trapping, gathering and herding continue to be major sources of food, raw materials and income. Moreover, they provide native communities with a perception of themselves as distinct, confirming continuity with the past and unity with the natural world. Such activities reinforce spiritual values, an ethic of sharing, and a commitment to stewardship of the land, based on a perspective of many generations."*

Various international environmental instruments have recently developed and adopted provisions, frameworks, and decisions relevant to TK. For example, the Ramsar Convention for the Protection of Wetlands of International Importance passed Resolution VII.8 at its Seventh Conference of the Parties (COP 7) in 1999, adopting "Guidelines for establishing and strengthening local communities' and indigenous people's participation in the management of wetlands".

The Convention to Combat Desertification also includes consideration of TK. The primary provisions of the Convention relating to TK are found in Articles 18.2 and 17.1(c). The latter states that owners of traditional and local knowledge should "benefit on an equitable basis and

on mutually agreed terms from any commercial utilization of it or from any technological development derived from that knowledge". Article 18.2 sets out the obligations of Parties with regard to traditional and local technology, knowledge, know-how and practices.

The World Intellectual Property Organization (WIPO) initiated its work on TK in 1998 through fact-finding missions, roundtables, and other discussions and consultations, and prepared a report examining the relationships between the need for legal protection of TK and existing intellectual property rights (IPR) (see WIPO 2001). Further, WIPO's General Assembly established an Intergovernmental Committee on Intellectual Property Related to Genetic Resources, TK and Folklore, which met for the first time in 2001 and agreed on a programme of work focusing on four key tasks related to the legal protection of TK.

UNCTAD has also initiated consultations on the implications of trade developments for TK. UNCTAD's work in the area of TK is mandated by the Plan of Action adopted by UNCTAD X (Bangkok, February 2000). Paragraph 147 of the Plan of Action (2000) stated that "UNCTAD should also, in full cooperation with other relevant organizations, in particular and where appropriate WIPO and WHO, promote analysis and consensus building with a view to identifying issues that could yield potential benefits to developing countries ... [and,] taking into account the objectives and provisions of the Convention on Biological Diversity and the TRIPS Agreement, [focus inter alia on] studying ways to protect traditional knowledge, innovations and practices of local and indigenous communities and enhance cooperation on research and development on technologies associated with the sustainable use of resources". In fulfilment of this mandate, UNCTAD held a first informal seminar on the issue in September 2000, followed by an Expert Meeting on the subject.

The Convention on Biological Diversity (CBD) is a key instrument for protecting the traditional ecological knowledge of indigenous and local communities. In 1998, at the fourth meeting of the CBD, the COP adopted a decision establishing a Working Group on Article 8(j) and related provisions, which held its first session in March 2000. Following recommendations by the Working Group, the fifth meeting of the COP (May 2000) adopted a Programme of Work on Article 8(j) and Related Provisions. This is the most comprehensive and ambitious programme on the protection and maintenance of the TK, innovations and practices of indigenous and local communities.

The pre-eminent international agreement covering IPR is the TRIPS Agreement of the World Trade Organization (WTO), which is designed to "promote effective and adequate protection of intellectual property rights" and to "reduce distortions and impediments to international trade" resulting from the enforcement of IPR. Many policy makers and members of civil society are concerned that the TRIPS Agreement promotes private commercial interests at the expense of important public policy objectives such as those contained in the CBD. Specifically, there is concern about the serious challenges that the TRIPS Agreement poses for the successful implementation of the CBD, including with regard to access and benefit sharing, protection of TK, technology transfer and the conservation and sustainable use of biological diversity. This paper discusses only the relationship between IPR and TK.

This relationship has been the subject of many debates. On the one hand, some commentators argue that existing IPR systems such as patents increase the risk of misappropriation and may therefore be partly responsible for the loss of TK. There is also concern that the current IPR regimes do not provide positive incentives for local and indigenous communities to preserve and, if they wish, capitalize on their TK. Clearly, existing IPR systems such as patents are largely inappropriate for protecting TK: they are often expensive and difficult to access, and they cannot safeguard TK that is communally held and passed through generations. There are other forms of IPR, such as geographical indications, copyrights, and trademarks, but their effectiveness has proven limited.

On the other hand, supporters of the existing IPR systems embodied in the TRIPS Agreement argue that IPR provide incentives for continued investment by local and indigenous communities in the preservation of their biodiversity-related cultural heritage. If existing IPR are combined with benefit-sharing arrangements (e.g. by being included in access contracts), then local communities may benefit financially from the use by others of their knowledge and practices. To the extent they do not achieve these goals, existing IPR systems may be changed to



make them more easily available to indigenous and local communities wishing to protect and commercialize their own resources.

By contrast, many believe that the commodification of TK is inherently problematic. Some indigenous organizations have noted that commercialization is not always desirable. They find that in some circumstances the use of IPR is culturally inappropriate, and they emphasize the development of non-IPR-based solutions that better reflect the need to conserve the integrity of TK. Examples of misappropriation of indigenous and local community knowledge through the use of IPR include the cases of *basmati* and *turmeric*.

To protect TK, new approaches at the national and international levels are required. At the national level, measures must be developed that reflect national priorities and the needs of indigenous and local communities. At the international level, a minimal framework will be required to protect TK against misappropriation and loss, and to ensure fair benefit sharing. This could be developed through an intergovernmental committee spearheaded by the CBD. Participants at the UNCTAD Expert Meeting, for example, noted that no international system had yet been developed that adequately preserved TK, protected the rights of knowledge holders, and compensated them equitably for its use. To protect TK and to achieve other goals of the CBD, a new *sui generis* system should be considered.

The development of appropriate *sui generis* systems will depend, at least as far as they provide protection for plant varieties, on the degree of flexibility left to WTO Members in implementing TRIPS Article 27.3(b). Currently, the TRIPS Agreement provides significant flexibility as to what is an “effective” *sui generis* system. However, there is concern that “UPOV 91”<sup>19</sup>, which is the most recent version of the International Union for the Protection of New Varieties of Plants (UPOV) system of plant variety protection, will be suggested as the benchmark “effective” *sui generis* system. This system limits farmer’s rights and could disrupt the traditional practice of saving and exchanging seeds. Now that the deadline for joining the more flexible UPOV 1978 Act has passed, new signatories to UPOV are being pressured to join the UPOV 1991 Act.

Whether existing IPR systems should apply to TK remains a controversial question, as do the terms in which it is discussed. Discussions of whether and how to protect TK, through the CBD or by some other means, must be driven not by commercial interests seeking to profit from its use, but by indigenous and local communities themselves. These discussions must also take into account the different circumstances of countries at different levels of development. Technical and financial assistance are needed to ensure the effective participation of some indigenous groups, particularly from developing countries, as well as to allow them to conduct their own broad-based consultative processes at the local and national levels. Furthermore, a “one size fits all” approach to the issue would not be practical or operational. Instead, a presentation and analysis of composite approaches, coupled with an exchange of best practices and worst experiences with regard to the protection and preservation of TK, may be a good way to develop participatory and lasting solutions.

## Recommendations for action

Two distinct types of actions are required to address the problems that TK is currently facing: actions to prevent TK loss and erosion and actions to ensure protection of the rights to TK. The first set of actions corresponds mainly to the interface between environmental management of indigenous and traditional peoples’ lands and resources, and the strengthening and revitalization of their cultures and institutions. The second corresponds to the area of legal protection of intellectual property. Although both areas are interconnected, they should be dealt with separately and should be advanced in parallel, so as to avoid the frequent problem emerging in international discussions on traditional knowledge, where debates often lead to the flawed, and dangerous, inference that nothing can be done in the first area until problems in the second area are solved - or to the equally dangerous conclusion that actions in the first area should be done first to better understand the nature of the subject matter and ensure its maintenance, before new legal systems for protecting it are developed.

### **Actions to preserve TK**

Substantial work to preserve TK and strengthen its transmission is urgently needed, though the actual work to be carried out depends on patterns of evolution of family and social life. Specifically, action is needed in the following areas:<sup>20</sup>

- Protection of lands and resources from external threats and maintenance of livelihood security. For many, if not all, indigenous people affected by the loss and erosion of TK, the fundamental problems remain land tenure and livelihood security. This is true especially in the context of market expansion, where intercultural connections are inevitable and happen mostly in asymmetric ways, at the expense of weaker cultures. Securing the traditional lands and resources of the affected people is the first priority. This implies also helping them effectively in protecting those lands and resources from external threats and pressures.

Encouragement to community members in making practical use of TK and native languages.

- Reevaluation of TK and traditional languages. Especially in areas subject to bilingualism and having national or dominant languages, younger generations tend to see their own language and traditions as second-class, obsolete, or primitive. Efforts should be made to communicate a new sense of the value and dignity of TK and native languages.
- Promotion of community involvement in all actions directly or indirectly related to local inhabitants' present and future lives. This should occur in a way that enables people to contribute their own views, perceptions, feelings, and knowledge.
- Documentation of TK, ideally by the communities themselves. This is of utmost importance and is needed for legal protection, registration and facilitation of transmission. A key condition for achieving this is the free and informed consent of the communities involved.
- Wider application of TK to new practices related to management of ecosystems, species, and resources, as well as to productive activities such as agriculture. Successful application of TK within and outside the communities would significantly enhance its value and would demonstrate its potential to younger generations.
- Integration of TK with other knowledge and technical systems for management of habitats, ecosystems and resources. In conditions of cultural change, market expansion, and growing competition for resources, TK will need to be complemented by other systems. A combination of approaches may provide the best option, particularly for younger generations, for preserving TK and incorporating it into daily life.
- Provision of training on dealing with and preserving TK. Such training should be available to everybody participating in community development, including community members.
- Preservation and revitalization of TK through non-traditional approaches and methods. Examples include setting up databases and producing Web-based information for young people. This makes training in TK preservation increasingly important.
- Focusing attention on women and children. Mothers are the first transmitters and keepers of knowledge. Children are those who receive TK and will have to use and develop it. It is fundamentally important to work with the school system. Increasingly, children from indigenous and traditional communities go to school, and almost certainly in a couple of decades the school will become a universal system for transmission of knowledge. However, this could happen at the cost of dismantling local languages, educational systems, and traditions. Working with the school system from the start is very important for managing cultural change in a way that benefits traditional communities. The school can and should be a vehicle for the transmission of TK together with other knowledge systems.
- Development of enabling legal and policy frameworks for the preservation of TK. For example, national protected-area laws should establish the obligation for protected-area managers to work with traditional communities living within those areas to explore integration of their TK into management plans. Managers should be explicitly forbidden to do such things as replacing native place names with names from other cultures. Actions to strengthen TK and local cultures should be part of negotiation packages for using resources. Products from traditional communities that incorporate TK should receive preferential treatment or be supported by incentives when it enters the market.



### **Actions to protect TK**

Following are recommendations regarding actions by governments to strengthen protection of TK vis-à-vis IPR policies and practices:

- Provide case studies on the impact of IPR on access and benefit sharing, including cases setting out IPR-related misappropriation of TK.
- Provide a forum to allow indigenous and traditional people to develop strategies for the protection of TK. Discussions in such a forum should be driven largely by indigenous and local communities, in line with their right to self-determination and respect for the preservation of their TK.
- Develop registries of TK. The development of TK registries at the local, national, and international levels, and sharing of this information with patent offices throughout the world, may help prevent the misappropriation and loss of TK. Such registries should be created only with the prior informed consent of the community concerned.
- Push for a substantive review of Article 27.3(b) in the WTO:
  - in relation to “life form patenting” and the clarification that plants, animals, microorganisms and other living organisms and their parts cannot be patented, and that natural processes that produce plants, animals and other living organisms should also not be patentable.
  - in relation to the option of establishing a *sui generis* system for the protection of plant varieties, push for clarification of Article 27.3(b) with a footnote stating that, in line with the CBD, *sui generis* laws for plant variety protection can protect innovations by indigenous and farming communities in developing countries.
  - On the relationship between the TRIPS Agreement and the CBD, stress that the review process should ensure complementarities between Article 27.3(b) provisions and the CBD, taking into account access and benefit sharing; conservation and sustainable use of biodiversity; and protection of the rights and knowledge of indigenous and local communities.
- Assist in the articulation of human rights principles as they relate to IPR. Policy makers should participate in the UN Committee for Economic, Social and Cultural Rights to draft a General Comment on the relationship between economic, social and cultural rights and IPR. They should also provide support for completing the Draft Declaration on the Rights of Indigenous Peoples, including strong provisions for control by indigenous people of their cultural and biological resources.
- Ensure that IPR systems, including any required by WTO Agreements, promote and do not undermine the fundamental human rights to self-determination, food security, health care, and development.

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## Notes

- <sup>1</sup> According to Berkes (1999: 8), traditional ecological knowledge is “a cumulative body of knowledge, practice and belief, evolving by adaptive processes and handed down through generations by cultural transmission, about the relationships of living beings (including humans) with one another and with their environment”.  
The Dene Cultural Institute of Canada defines traditional environmental knowledge (TEK) as “a body of knowledge and beliefs transmitted through oral tradition and first-hand observation. It includes a system of classification, a set of empirical observations about the local environment, and a system of self-management that governs resource use. Ecological aspects are closely tied to social and spiritual aspects of the knowledge system. The quantity and quality of TEK varies among community members, depending on gender, age, social status, intellectual capability, and profession (hunter, spiritual leader, healer, etc.). With its roots firmly in the past, TEK is both cumulative and dynamic, building upon the experience of earlier generations and adapting to the new technological and socio-economic changes of the present” (cited in Burgess 1999: 11).  
The term “traditional”, as used in this context, should not be taken to refer to something static and homogeneous. Rather, “tradition” should be understood as “a filter through which *innovation* occurs” (Posey 2001), a “tradition of invention and innovation” (Pereira and Gupta 1993). In a report to the CBD Secretariat, the Four Directions Council of Canada explains: “What is ‘traditional’ about traditional knowledge is not its antiquity, but *the way it is acquired and used*. In other words, the social process of learning and sharing knowledge, which is unique to each indigenous culture, lies at the very heart of its ‘traditionality’. Much of this knowledge is actually quite new, but it has a social meaning, and legal character, entirely unlike the knowledge indigenous people acquire from settlers and industrialized societies” (Four Directions Council 1996).
- <sup>2</sup> This will be the term used throughout this paper.
- <sup>3</sup> Since the publication of the data in Table 1 (Harmon 1998), the list of megadiversity countries has been augmented to 17 (see Conservation International, 2000). As of 2000, 13 of the 17 megadiversity countries are also among the top 25 countries for endemic languages, with the addition of Papua New Guinea, the Philippines and the United States; the four megadiverse countries that do not figure among the top 25 for language endemism are Ecuador, Madagascar, South Africa, and Venezuela (Harmon, personal communication)
- <sup>4</sup> Article 1 of ILO 169 states that the Convention applies to:

(a) Tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs, traditions, special laws, or regulations; and

(b) Peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present State boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

This Article also states: “Self-identification as indigenous or tribal shall be regarded as a fundamental criterion for determining the groups to which the provisions of this Convention apply.”

<sup>5</sup> Gray’s figures do not include traditional communities. Posey (1999) notes that there are no reliable figures on “traditional” societies, but considers that they may represent up to 85 per cent of the world’s non-urban population.

<sup>6</sup> From Harmon 1998.

<sup>7</sup> The most comprehensive catalogue of the world’s languages, *Ethnologue*, in its thirteenth edition (Grimes 1996) reports 6,703 languages (including some sign languages and some recently extinct languages), of which 32 per cent are in Asia, 30 per cent in Africa, 19 per cent in the Pacific, 15 per cent in the Americas, and 3 per cent in Europe.

<sup>8</sup> Language diversification occurring among populations that live in close contact.

<sup>9</sup> For a detailed explanation of the approach, methodologies, and findings of this mapping, see WWF 2000.

<sup>10</sup> WWF 1999.

<sup>11</sup> WWF 1999: 3

<sup>12</sup> WWF 1999: 4

<sup>13</sup> A joint project of WWF International and Terralingua

<sup>14</sup> The majority of ethno-linguistic groups in the Global 200 are found in tropical forest ecosystems. As was previously mentioned, these ecosystems harbour at least 1,400 distinct indigenous and traditional peoples (European Commission 1994), if areas under current forest cover are considered, and about 2,500 if the original extent of tropical and subtropical moist forest ecoregions (and associated freshwater ecoregions) is included. This represents 54 per cent of the total number of ethnolinguistic groups in the Global 200 and 36 per cent of the world total. The total figure for all tropical forest ecoregions, including mangroves, amounts to nearly 2,900, which represents 62 per cent of all ethnolinguistic groups in the Global 200 and 42 per cent of all ethnolinguistic groups in the world. All major habitat types in the three biomes, however, show the presence of ethnolinguistic groups to a greater or lesser extent.

<sup>15</sup> Interestingly, many of the factors commonly mentioned as threats to biodiversity conservation (see WWF 1999) present close parallels with several factors considered to be threatening to cultural and linguistic diversity. Some examples: (1) Island ecosystems are fragile owing to the sensitivity and endemism of island species and the severe threats native island biota face from introduced species and habitat loss. The highly endemic cultures and languages of islands are similarly fragile owing to the influx of non-indigenous populations and loss of control over land by the local populations (Hawaii being a characteristic example). (2) Habitat fragmentation is considered a prime indicator of an extinction-prone environment, owing to species’ inability to move in response to climate change or other disturbances. Similarly, the fragmentation of the social “habitat” of human populations is a significant factor in cultural and linguistic endangerment. (3) A region characterized by the presence of many species with highly restricted distributions is at high risk for biodiversity loss under adverse conditions. Likewise, a large set of small culturally distinct human communities living in a given region may be less buffered from outside human interference than a single larger population.

<sup>16</sup> Examples include knowledge contributions on primate ecology and habitat history.

<sup>17</sup> For example, IUCN/UNEP/WWF 1991: 61, Box 11; the Ramsar Convention for the Protection of Wetlands of International Importance at its Seventh Conference of the Parties (COP 7), 1999; the Convention to Combat Desertification WIPO, 2001. UNCTAD, 2000

<sup>18</sup> IUCN/UNEP/WWF 1991: 61, Box 11.

<sup>19</sup> The UPOV Convention provides a “ready-made” system of plant variety protection and emphasizes the rights of plant breeders. The UPOV 91 Act supersedes an earlier version of the Convention, known as the UPOV 78 Act. The UPOV 91 Act contains stronger stipulations for maintaining the effectiveness of breeders’ rights in the face of changing technologies, among other additions. Many countries believe that the 1978 version is more consistent with the interests of developing countries.

<sup>20</sup> Some of these ideas are elaborated in proposals of the Dene Cultural Institute of Canada as cited by Burgess 1999.

## RECOMMENDATIONS TO UNCTAD FROM INDIGENOUS GROUPS IN ATTENDANCE<sup>1</sup>

The Indigenous Peoples<sup>2</sup> attending this meeting submit the following principles and recommendations for consideration by the UNCTAD Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices and in any programme of work to follow up on this meeting.

### Principles:

1. Indigenous Peoples have a holistic relationship with the natural world that extends well beyond pure economic interests.
2. Indigenous Peoples have a fundamental right to the practice of their culture, and therefore to use their customary laws to maintain and protect indigenous knowledge.
3. The current intellectual property rights (IPR) system is inappropriate for the recognition and protection of traditional knowledge (TK) systems because of the inherent conflicts between these two systems, including the fact that:
  - Indigenous Peoples' rights are holistic and collective by nature.
  - The IPR system is founded on private economic rights, whereas, Indigenous Peoples' systems are values based and include both rights to use and obligations to respect the natural world.
  - The IPR system is protected within legal systems around the world. TK systems are largely unrecognized and unprotected within legal systems.
4. Indigenous Peoples have a fundamental right to participate in decision-making processes that affect their well being, and this has been accepted by a number of UN agencies and conventions including the Convention on Biological Diversity, the Ramsar Convention on Wetlands, the UN Framework Convention on Climate Change and the UN Development Program.

### Recommendations:

1. Priority must be given to the strengthening of existing customary laws and value systems of indigenous peoples in the protection of TK.
2. Patenting of life forms should be banned because it attacks the values and livelihoods of indigenous and traditional peoples.
3. Social, cultural, economic and spiritual values should be included in the development of protective mechanisms.
4. An Indigenous Peoples Working Group (IPWG) on TK should be established for the purpose of developing mechanisms for the protection and enhancement of TK systems.
5. WIPO's constitutional mandate is the "protection and promotion" of the existing IPR system, which is incompatible with Indigenous peoples' TK systems. For this reason, Indigenous peoples recommend that the IPWG take the lead role in the development of mechanisms for the protection of TK.
6. The IPWG could be hosted by the UN Working Group on Indigenous Peoples.
7. The IPWG should work with all UN agencies whose responsibilities include protection of TK, including CBD, WIPO, UNEP, UNCTAD, IUPGR, FAO, WTO and UNDP.
8. The IPWG must be adequately funded and supported by the United Nations.
9. There must be a more coordinated, collaborative and systematic approach among UN agencies and international environmental conventions such as the CBD and the CCD in efforts being made to protect TK.
10. In developing protective mechanisms, reference must be made to experiences at the local community level in recognition of the vast diversity of indigenous cultures around the world.
11. Indigenous Peoples call for the elimination of all forms of biopiracy and would like to see efforts be made by WIPO and others towards this objective.

## Notes

- <sup>1</sup> Indigenous groups in attendance included: the Indigenous Peoples Biodiversity Network, the Aboriginal and Torres Straits Islander Commission (ATSIC, Australia), Las Organizaciones Indigenas de la Cuenca Amazónica (COICA), the Inuit Women's Association (Pauktuttit), the International Indian Treaty Council (IITC), Ilkerin Loita Maasai (Kenya), and the Maori (of New Zealand).
- <sup>2</sup> The term *Indigenous Peoples* is here understood to include traditional peoples and local communities and their cultures.



# PROTECTING TRADITIONAL KNOWLEDGE, INNOVATIONS AND PRACTICES: THE INDIAN EXPERIENCE

Atul Kaushik

## Introduction

The development and utilization of traditional knowledge (TK), by its very nature, involves communities and takes generations. It is closely intertwined with resources available in the environment around the communities involved. The holders of TK and its users are the same and have taken time to develop TK; they are, therefore, able to use it in a sustainable manner. Modern systems of knowledge and its exploitation are a result of the industrialization process, where production — not sustainable utilization — is the mantra. The development of modern knowledge takes years, not generations. Since many people are interspersed between the developers and the practical users, there is no intrinsic need to apply such knowledge in a sustainable manner.

Knowledge, both modern and traditional, has now become the dominant factor in production. A consequence of this is that the knowledge of local communities and people is exploited in an unsustainable and inequitable manner. The unfairness of such practices is compounded by the fact that the holders of such knowledge are not aware of modern legal systems that could be used for its protection, nor have they sought due compensation for its use. Together, these circumstances may lead to the unfortunate consequence of TK's disappearing altogether.

Due to the globalization of production systems and the distance between the holders of knowledge and its exploiters, the future of TK is in peril. The international community is debating the consequences of globalization in its various dimensions in various forums. It is the international community's responsibility to come up with means of protecting TK.

This paper shares the Indian experience in connection with protecting biological diversity and touches on some possibilities for international cooperation.

## Protection of biodiversity and traditional knowledge: The Indian experience

TK associated with biological resources is an intangible component of the resource itself. It has the potential of being translated into commercial benefits by providing leads for development of useful products and processes. The valuable leads provided by TK save time and money that industry would otherwise invest in research and product development. Hence, a share of these benefits must be returned to the creators and holders of TK.

India is a party to the Convention on Biological Diversity (CBD). The CBD envisages that the benefits accruing from commercial use of TK have to be shared with the people responsible for creating, refining and using this knowledge.<sup>1</sup> India is also a party to the TRIPS Agreement of the World Trade Organization (WTO), which creates, *inter alia*, private rights over inventions.

The CBD offers opportunities for India to realize benefits from these resources. India has, therefore, proposed to enact legislation to realize the benefits provided for by the Convention. The bill, which was introduced in the Parliament in the 2000 budget session, addresses the basic concerns of access to and collection and utilization of biological resources and knowledge by foreigners, and sharing of benefits arising there from. The legislation provides for a National Authority that will grant approvals for access, subject to conditions designed to ensure equitable sharing of benefits.

Recently, there have been several cases of biopiracy of TK from India. First a patent was issued for the wound-healing properties of *haldi* (turmeric); now patents have been obtained in

other countries for the hypoglycaemic properties of *karela* (bitter gourd), *brinjal*, and other plants. An important criticism in this context relates to foreigners' obtaining patents based on Indian biological materials. There is also the view that the TRIPS Agreement is aiding the exploitation of biodiversity by allowing the patenting of biodiversity expressed in life forms and knowledge. A patent granted on *neem* as a fungicide was contested and subsequently revoked in the European Patent Office in May 2000. However, since the time and money involved in getting individual patents examined and revoked in foreign patent offices are prohibitive, an internationally accepted solution to such biopiracy is necessary.

The problem of biopiracy may not be resolved by such revocation actions and domestic biodiversity legislation alone. There is a need to provide appropriate legal and institutional means at the international level for recognizing the rights of tribal communities to their TK based on biological resources. There is also a need to institute mechanisms for sharing benefits arising out of the commercial exploitation of biological resources using such TK. This can be done by harmonizing the different approaches of the Convention on Biological Diversity on the one hand and the TRIPS Agreement on the other, as the former recognizes the sovereign rights of States over their biological resources and the latter treats intellectual property as a private right. India has proposed, in this context, that patent applicants be required to disclose the source of origin of the biological material utilized in their invention under the TRIPS Agreement and also be required to obtain the prior informed consent (PIC) of the country of origin. This would enable domestic institutional mechanisms to ensure sharing of the benefits of such commercial utilization by the patent holders with the indigenous communities whose TK has been used. Simultaneously, provisions for disclosure of the source of biological material have been introduced in amendments proposed to the Patents Act of 1970 through the Patents (Second Amendment) Bill 1999. The bill is currently before the Parliament. What is required in addition, to prevent biopiracy, is the acceptance of this practice of disclosure and PIC by all patent offices in the world.

### **Protection of TK associated with biological resources**

The issues relating to recognizing, protecting and rewarding TK associated with biological resources are very complex, and the modalities for protecting TK are still emerging and evolving. The nature of entitlements and sharing of benefits is a grey area. Even at the international level, clarity regarding these issues has, as yet, not emerged, and countries are grappling to understand them.

The protection of knowledge, innovations and practices associated with biological resources does not seem to fall within the conventional legal systems of IPR protection (e.g. patents, copyrights and trademark). These conventional forms of IPR are inadequate to protect indigenous knowledge, essentially because they are based on the need to protect individual property rights, whereas TK is, by and large, collective. Further, the recognition of informal knowledge for the purpose of IPR protection presents other difficulties, such as the following:

- TK is developed over a period of time and may either be codified in texts or retained in oral traditions over generations; the conditions of novelty and innovation necessary for granting of patents are, therefore, not satisfied.
- Different communities quite often hold similar knowledge.

Nevertheless, the development of an appropriate form of protection for the knowledge of local communities is of great interest to countries rich in biodiversity and TK, such as India.

### ***Suggestions and options for protecting TK***

The following suggestions have been advanced to extend protection to knowledge, innovations and practices:

- Documentation of TK
- Establishment of a TK digital library
- A TK-specific registration and innovation patent system
- Development of a *sui generis* system

*Documentation of traditional knowledge*

Some believe that proper documentation of associated TK could help check biopiracy. Some also assume that if knowledge or materials are documented, they can be made available to patent examiners the world over, so that prior knowledge in the case of inventions based on such knowledge or materials is readily available. It is also hoped that such documentation will facilitate the tracing of indigenous communities with whom the benefits of commercialization of such materials or knowledge have to be shared.

Others, however, believe that documentation may facilitate biopiracy. They argue that the trade secrets of an indigenous community can be maintained only as long as they are closely held by the community: as soon as they are put on paper, they will become accessible to pirates and be purloined. This dilemma is the subject of discussions in national and international debates on benefit sharing. Some suggest empowering the indigenous communities themselves so that they are able to get legal protection for closely held knowledge without the involvement of outside agencies. Nevertheless, documentation has one clear benefit: It would prevent the issuing of patents based on public-domain TK that today are difficult to prevent because patent examiners lack some necessary information.

In India, the preparation of village-specific Community Biodiversity Registers for documenting all knowledge, innovations and practices has been undertaken in a few states.

*Traditional Knowledge Digital Library*

Recently, there have been several cases of biopiracy of TK from India. To prevent such instances in the future, there is a need to develop digital databases of prior knowledge related to herbs that is already in the public domain. Following problems experienced with patents for brinjal and other plants, an exercise has been initiated in India to prepare an easily navigable database of documented TK relating to the use of medicinal and other plants that is already in the public domain. This database, to be known as the Traditional Knowledge Digital Library, would enable patent offices all over the world to search for and examine existing uses or prior knowledge of the enabling knowledge from which an "invention" may have been derived.

While documentation of TK is one means of recognizing knowledge holders, mere documentation may not lead to the sharing of benefits arising from the use of such knowledge, unless the documentation is accompanied by some mechanism for protecting the knowledge. In other words, documentation of TK may serve the defensive purpose of preventing the patenting of this knowledge in the form in which it exists, but documentation alone will not facilitate benefit sharing with the holders of TK.

*Innovation registration and patent system*

Creating a system for the registration of innovations by inventors would be tantamount to giving inventors the right to challenge any use of their innovations without prior permission. For novel and useful innovations, some kind of petty patent giving protection for a limited duration might be worked out.

Some limited efforts regarding registration have been made in India. For example, the Honey Bee Network maintains a database, established 10 years ago, for the registration of innovations. The database can be accessed for adding value to these innovations and sharing benefits with knowledge providers and innovators. It involves documentation, use and dissemination of indigenous knowledge. Probably the world's largest database on grassroots innovations, it now includes about 10,000 innovations, with the names and addresses of the innovators (individuals and communities). Through the newsletter of the Honey Bee Network, information about grassroots innovations has been disseminated to more than 75 countries. For example, this database has entries on traditional uses of fish and fish products, information that can (among other things) be used to improve crop productivity.

### *Development of a sui generis system*

Some experts have suggested that a *sui generis* system separate from the existing IPR system should be designed to protect knowledge, innovations, and practices associated with biological resources. However, the parameters, elements and modalities of a *sui generis* system are still being worked out. A *sui generis* system of protection for plant varieties has been developed separately in India, and a bill regarding this is before the Parliament.

### *Adding value to TK*

An additional issue relating to TK is the need to add value to this knowledge by converting it into economically profitable investments or enterprises. Many of the innovators, however, do not have the capacity for adding value. Institutional support is needed for locating, sustaining, and scaling up grassroots innovations, and to enhance the technical competence and self-reliance of these innovators, through the establishment of “green venture” promotion funds and incubators. In India’s national budget for 1999–2000, a proposal was made to set up a National Innovation Foundation. The purpose of this foundation, which is in the process of being established with an initial budget of INR.200,000,000, is to build a national registry of innovations, mobilize intellectual property protection, set up incubators for converting innovations into viable business opportunities and help disseminate this information across the country.

### ***Provisions in the Biodiversity Bill, 2000, and the Patents (Second Amendment) Bill, 1999***

To ensure that the holders of TK that is still not in the public domain get the benefits arising from the use of such knowledge, an enabling provision for protecting TK has been included in the Biodiversity Bill, 2000. The relevant provisions of this bill are discussed below.

Section 36(iv) provides for protection of the knowledge of local people relating to biodiversity through measures such as registration of such knowledge and development of a *sui generis* system. For ensuring equitable sharing of benefits arising from the use of biological resources and associated knowledge, Sections 19 and 21 stipulate that the approval of the National Biodiversity Authority (NBA) must be secured before the resources can be accessed. While granting approval, the NBA will also impose terms and conditions that secure equitable sharing of benefits. Section 6 provides that anybody seeking any kind of IPR to research based on biological resources or knowledge obtained from India needs to first obtain their approval of the NBA, which will impose benefit-sharing conditions. Section 18(iv) stipulates that one of the functions of NBA is to take measures to oppose the grant of IPR in any country outside India to any biological resource obtained from India or on knowledge associated with such a biological resource.

In the Patents (Second Amendment) Bill, 1999, the grounds for rejection of a patent application or revocation of a patent include non-disclosure or wrongful disclosure of the source of origin of the biological resource or knowledge in the patent application. Patent applications are also required to disclose the source of origin of the biological material used in an invention.

The above provisions in the Biodiversity Bill, 2000, and the corresponding provisions in the Patent (Second Amendment) Bill, 1999, would ensure equitable sharing of benefits arising from the use of TK with the original holders of such knowledge.

### **International action**

Even though provisions of Article 8(j) of the CBD are subject to national legislation, India believes that securing benefits arising out of the use of TK related to biodiversity cannot be limited to national action, and that a basic understanding of and respect for an internationally recognized regime to protect the rights of these communities is an absolute must. These two requirements, therefore, have to go hand in hand. To secure this, India’s representatives in international forums under the aegis of the CBD as well as the WTO have suggested that applications for patents be required to disclose the following:

- The source of knowledge and biological material; and
- State that the prevalent laws and practices of the country of origin have been fully respected.

While securing benefits for creators and holders of TK is subject to national legislation, national action alone is not sufficient to ensure the realization of benefits. Users of this knowledge all over the world must share responsibility for ensuring compliance with the consent requirement for using the knowledge and equitable sharing of benefits derived from it as envisaged in the CBD.

Two conclusions can be drawn from India's national experience with protection of biodiversity and TK:

- (i) National biodiversity preservation regimes conforming to the objectives of the CBD are being established to protect TK associated with biological resources. These regimes could provide legal protection to biological resources and associated traditional knowledge at the national level. However, these regimes are not adequate for providing international protection of TK.
- (ii) Certain supplementary actions help in preserving TK and/or sharing the benefits arising out of the commercialization of TK. Documentation of TK can help prevent the issuance of unfair patents. It cannot, however, resolve the problem regarding TK that is kept closely guarded by the knowledge holders (and is, therefore, not in the public domain). Registration can help facilitate information and material transfer agreements. It cannot, however, stop others from accessing TK in order to add value to it and obtain legal protection, including protection through IPR, for the resulting product without sharing the benefits arising out of sale of that product. Innovation patent systems may be helpful for those holders of TK who have the capacity to understand and access such systems; however, the holders of TK generally do not have such capacities. As a result, these supplementary actions are of no avail as far as the international dimension of the issue is concerned.

## **The international debate**

Although the issue of protecting TK is engaging the international community in a debate in some international forums, the debate is inevitably tailored to the charters and focuses of these forums and not to the rights of TK holders.

For example, the debate in the WTO is focusing on avoiding biopiracy. While attention to biopiracy is necessary, and while corrective action through the WTO is needed, this focus limits the debate to the defensive element of traditional knowledge – that is, ensuring that patents based on prior knowledge are not granted. It does not adequately cover the more relevant aspect, namely, extending legal protection to the holders of TK themselves.

The debate in the CBD is focused more on the access and benefit-sharing aspects of TK, as per the mandate of the CBD. If such knowledge has already been accessed, legally or illegally, then recourse to benefit-sharing mechanisms cannot be adequately addressed under the CBD.

WIPO is also looking at the issue, but primarily in order to find ways to adjust TK within the available forms of IPR. As can be seen from the debate so far, most TK is not amenable to protection within the existing forms of IPR.

In addition there is one aspect of TK that is not on the agenda of any of these forums, namely the commercialization of TK on behalf of its holders (i.e. addressing the capacity needs for its marketing and ensuring a fair price for its holders). This aspect would be best handled by an organization that deals with trade and development.

## ***The proposal***

India, therefore, proposes that a separate and *sui generis* system for the protection of TK and its international recognition be explored. India is still in the process of identifying the essential components of such a system, and the United Nations Conference on Trade and Development

(UNCTAD) could possibly help in developing it. Current thinking suggests that such a system should include the following elements, among others:

- Legal protection for the rights of the holders of TK through national legal or other regimes
- International recognition of national protection
- Adequate interaction between different national authorities to ensure that information on such protection is available to the nationals of each country.
- A system or procedure whereby the use of TK, particularly for seeking IPR protection, is allowed only after such use is disclosed and PIC is obtained from the TK holders or the competent national authority of the country of origin.

## Notes

<sup>1</sup> Refer to article 8(j)



# INTERNATIONAL BODIES AND TRADITIONAL KNOWLEDGE

**Manuela Cameiro da Cunha**

There is an inherent tension between the existing intellectual property rights (IPR) system and the traditional knowledge (TK) system. The question is how to organize the interface, not between two very different systems, but rather between one global IPR system and a multitude of different local regimes with specific colonial histories.

TK is part of a way of life that has inherent value. It requires specific conditions that have been clearly spelled out by indigenous organizations, such as secure land rights.

So under what logic should we operate? Is our goal merely to market traditional knowledge, practices and innovations, or to promote their continued existence? Is it present knowledge we are discussing, or present and future knowledge? That is, are we focusing on available knowledge or on processes of producing knowledge? As was aptly stated in the final document of the Convention of the Parties in Buenos Aires in 1996, "What is traditional in traditional knowledge is not its antiquity but the way it is acquired and used." In short, knowledge is dynamic, and so are institutions.

IPR as we know them now have their own history: as much as any other system, they are historically and culturally bound. They are, in other words, themselves *sui generis*. That is why IPR can only be the exception rather than the rule and why other *sui generis* systems have to be devised to meet other situations.

The issue cannot, therefore, be discussed in the abstract. Let us take as an example the community intellectual rights proposal as originally presented by the Third World Network. Although this proposal originated in South-East Asia, it is gaining support in many Latin American and African countries. Note that the term *property* no longer appears. The basic idea is that TK should stay in the public domain for anyone to use, but that originators should share in the benefits when TK is used for commercial purposes for an indefinite period of time. This view contrasts starkly with contemporary IPR practice, which requires exclusivity and a limited time frame.

In other words, the two parties' expectations are opposed: free access and public domain versus monopoly and secrecy — an unlimited time frame for intellectual rights versus prescription of intellectual rights after a certain time.

Certain conditions are necessary for solving this kind of situation, some of which correspond to the mandates of international bodies, particularly UNCTAD, UNESCO, WIPO, WTO, ILO and FAO. These include:

- *International enforcement of public domain status.* An instrument is needed that mandates international respect for every country's public domain. Currently there is a double standard. Because of the TRIPS Agreement, countries have to respect within their boundaries the intellectual protection granted by other countries. Yet the reverse is not true: there is no generalized obligation for countries to recognize other countries' public domain. As a result, knowledge that has been in the public domain for generations in one country might be privatized and enjoy IPR protection in another.
- *Prior informed consent for patenting.* A system is needed that requires anyone seeking protection for a product or innovation to provide the full description of its origin and exhibit proof of prior informed consent by the peoples whose TK contributed to that development.
- *A system of payment for commercial use of the public domain.* UNESCO and WIPO have studied this in relation to the protection of folklore under the term *domaine public payant*.
- *An estimate of the economic value of TK in the industry.* This part may appear easy, but it certainly is not. It would be useful to have a task force to establish the parameters of this economic value.

- *Availability of legal expertise in drafting contracts.* A body of independent lawyers with relevant expertise is needed.
- *In-the-field study of the short- and long-term effects on traditional societies of the systems adopted.* After such study, the procedures should be revised accordingly.

# PROTECTING TRADITIONAL KNOWLEDGE: AN INDUSTRY VIEW

Tim Roberts

## Introduction

It is assumed by some that industry will take a position against protecting traditional knowledge (TK). This is not necessarily so. However, an important preliminary question is what precisely is meant by protection and what are the objectives of giving it. *Protecting* TK could mean:

- *Preserving* it, because of its intrinsic value to its owners, to the world, and to future generations;
- *Promoting* it, through its widest possible dissemination and use for the benefit of the human race as a whole;
- *Controlling its use* in order to prevent misuse; and/or
- *Ensuring to its owners a proper share of the benefits* from the use of such knowledge.

There could be many definitions of and reasons for protection. Some of these are fully compatible with others, others not completely so. The reasons and how they are ranked will determine what is meant by protection and will be instrumental in shaping any system that is put in place.

Industry by itself cannot decide such questions. In industry's view, the important general principle is that knowledge should, as far as possible, be free to all. This rule is, however, subject to some exceptions such as the intellectual property rights (IPR) exercised through patents and copyrights. It may well be appropriate to make such an exception for TK subject to the caveat that all exceptions to the general principle must be made carefully and not go beyond justifiable limits.

## A practical system for protecting TK

Almost as important as principle is practice. Besides clarifying the principles for protecting TK and explaining the reasons for giving such protection, industry seeks a *simple, coherent and practical* system for implementing such protection. It is better to have a system that meets most of its objectives and works in practice than one that meets all its objectives but is inoperable. A practical system will probably be based on the following tenets:

- No restriction of knowledge already in the public domain  
Industry recognizes that this issue is contentious. In some cases, TK has come into the public domain without the consent of its owners, sometimes despite their explicit opposition to it. Nevertheless, once information is in the public domain, there are great difficulties in controlling it, so any exceptions to making such knowledge free need to be made carefully.
- No retrospective application  
Again, this will be a contentious issue, and exceptions may be necessary. A retrospective scheme will impose obligations on existing users that they would perceive as unfair, and might find difficult to comply with. Also, a fully retrospective scheme without time limits could pose conceptual and operational problems: A particular type of knowledge may today belong to a particular group of people, but they may have received it from others, perhaps thousands of years ago.
- Consistency with protection for existing forms of intellectual property rights  
This issue too is contentious, and it is not an obvious priority for proponents of protection of TK. It has been suggested, however, that such consistency is easy to achieve and politically essential. While there is no great enthusiasm in industrial circles for any form of TK protection, neither are there currently strong objections to it. However, if a TK protection system is seen as displacing or damaging the IPR (patents, trademarks, copyright, trade secrets) that the industries of the developed world set great store by, those indus-

tries will undoubtedly mount a powerful lobby with their governments against the system. This would be both undesirable and unnecessary.

### **The interface of TK rights with other forms of rights**

The interface of TK rights with other forms of IPR is a technical issue. Most IPR are negative, not positive. They are not rights to make patented things or carry out patented processes; they are rights to exclude others, to stop others from making products or using processes without permission. Often, a specific article will be subject to more than one intellectual property right: for example, a bottle of soft drink may be subject to a patent on the method of forming the container, a registered design for the bottle shape, a trade secret regarding the ingredients of the drink, a copyright on the text of the label, and trademark rights to the logo on the label. Frequently, these different rights are owned by different people or entities, all of which have to give their agreement before the product can be sold. It would be possible for TK rights to be involved with such a product if, for instance, the soft drink were to be reformulated to contain a traditional herb. The TK owners could then have the same rights to prevent sales of the product that the other IP owners have. TK rights need not interfere with any currently recognized IPR any more than such rights interfere with each other. It would be a mistake for legislators to think that any effective protection of TK must require restriction of existing rights.

# PROTECTION OF TRADITIONAL KNOWLEDGE ON BIOLOGICAL DIVERSITY AT THE INTERNATIONAL LEVEL: REFLECTIONS IN CONNECTION WITH WORLD TRADE<sup>1</sup>

Susette Biber-Klemm

## Introduction

Scientific progress in the last decades has furthered insight into the value and importance of biological diversity and related traditional knowledge (TK). Awareness of the interconnection of all ecological processes at the local, regional and global level is growing, while rapid evolution of the genetic sciences and technologies has changed our perception of life and the living environment. These scientific advances have enhanced our understanding of the importance of biodiversity and ecosystem functions that are essential for the continued existence of life on earth. In the field of domestication of animal species and plant varieties, progress in genetics has generated new understanding of the importance of maintaining broad genetic variability in order to assure food security in a changing world.

Progress in biotechnology and in methods of industrialized, formal research is creating new perspectives for the commercial use of biological resources. Industry is investing large sums to create new products based on biochemical and genetic information contained in wild biological resources<sup>2</sup> in the field of food and pharmaceuticals. This trend is in response to growing consumer interest in natural products as sensitivity to environmental issues increases in western countries.

The knowledge of farming communities and indigenous peoples plays a twofold role in this process. First, it is important for the conservation and maintenance of diversity in wild and domesticated animal species as well as cultivated plant varieties and their landraces,<sup>3</sup> bred by generations of small-scale farmers and farming communities in subsistence economies. This is an important source of crop genetic diversity and thus important for food security. Second, the knowledge contributes to industrial innovation processes: Information about specific qualities of crops can be valuable for industrial plant breeding; TK plays an important role in identifying biological resources worthy of commercial exploitation.<sup>4</sup>

These issues confer a threefold significance on TK and associated biological resources:

- TK and biological resources are indispensable for the day-to-day survival of a great part of humanity, providing sustenance and basic health care, housing, clothing and fuel for cooking and heating.
- TK, with its capacity to maintain biodiversity and the underlying evolutionary processes, contributes to the long-term survival of humanity as a whole;
- TK is an asset to international trade.

TK is disappearing at an accelerated rate. Therefore, a starting point for further reflections is — in accordance with the UNCTAD Plan of Action<sup>5</sup> — that ways must be found of maintaining and protecting TK.

This paper looks at these issues from a legal point of view. It explores means and instruments for protecting TK in the context of international trade and development. However, an analysis of the factual background reveals that the issue exhibits a complex pattern defined by the specific characteristics of TK and the varieties of interests involved. Legal instruments to support TK at the national, regional and international levels must be devised according to the criteria resulting from these features, and taking into account the objectives they are to fulfil. Therefore the paper analyses the specific characteristics of TK and explores how trade and development issues influence its existence and maintenance. Against this background, it then identifies the objectives, criteria and elements for a legal solution.

## Traditional knowledge: what is it?

In order to identify the elements and criteria relevant for a legal solution, it is important to be aware of the specific characteristics of TK, its different types and corresponding protective needs.

### **Characteristics of TK**

The Convention on Biological Diversity (CBD) in Article 8j refers to TK but does not define the term. However, the UNCTAD Expert Meeting on Systems and National Experiences for Protecting TK, Innovations and Practices<sup>6</sup> amply demonstrated that TK is a cross-cutting issue embedded in the culture of a people. Thus its existence is dependent on, and determined by, the maintenance of this culture. An important element is the close interrelationship between culture, spiritual values, knowledge and the natural environment.<sup>7</sup>

While the term traditional knowledge is sometimes used to mean different things, the following common features can be identified: The information is, as a rule, not perceived as the creation of individuals, but is understood as the achievement of a specific community, and one that has evolved – and continues to evolve – in cumulative steps over generations. It is managed and exchanged according to the customs or laws of the community. A close interaction exists between TK of any kind and the surrounding ecosystem. TK plays a key role in the preservation and sustainable use of the diversity of wild and domesticated plant varieties and animal species. In turn, it depends on the environment in which it has been created.

As will be shown later in the discussion, this last characteristic is of specific importance in the context of global trade.

### **Types of TK**

As the preceding section suggests, there exists a great variety of types of TK. The following grouping is considered relevant as a basis for discussing (legal) solutions:

- Valuable information can come *in addition* to a biological resource, as, for example, with information relating to the effects of medicinal plants, or on the specific qualities of a crop. However, in the case of domesticated plants and animals, the result of the breeding skill of generations of farmers is *integrated* into the plants' and animals' genetic information. When animals and plants are traded, this type of TK is passed on simultaneously.
- TK can be freely accessible within a community and known to everybody, as is the case with folk remedies such as turmeric<sup>8</sup> or neem.<sup>9</sup> Access and use can, on the other hand, be regulated and restricted within the community – for example, in the case of plants used for ritual purposes, such as *Ayahuasca*.<sup>10</sup>
- TK can be clearly allocated to a specific, clearly delimited group or community, or it can be integrated into the culture of a society in general.
- TK can also be distinguished by the way a community deals with it. The community can opt to keep it a secret known only to the community, or transfer it as a gift, emphasizing its spiritual character as opposed to its market value, or market it while insisting on the fairness of the transaction and the sharing of benefits.

### **Common features of TK: its informational value and the problem of allocation**

When dealing with TK of any kind one is essentially dealing with information – either information contained in the knowledge itself, or the genetic information contained in the seeds of plant varieties or in domesticated animals. Hence both TK and genetic resources have the attributes that are characteristic of information of any kind: Information, once it has been revealed, becomes independent of its source, and it is impossible for the original owner to prove that it was exclusively his or hers. Information is valueless until it is revealed; but, once the information has been revealed, its value cannot be appropriated. With respect to TK and information contained in genetic resources, this leads to the following implications:



- TK, once it has been revealed, is accessible to everyone. While it is true that TK is frequently protected by customary laws within the cultural framework and structures of the communities concerned, these laws are not sufficient to regulate conditions of exchange and trade in the broader context of growing intercontinental economic interdependence and cultural exchange. (see Girsberger, 1999; Dutfield 1999; Greene and Drescher, 1993).
- Genetic resources are self-propagating and can be produced and traded as goods for consumption. Valuable information is contained in each seed. Biotechnology enables the accessing of this information using a small sample: a single seed is sufficient to reproduce the information.

Hence, from a legal viewpoint, TK and genetic information can be freely used by everybody. This “open-access” situation permits scientists within industrial innovation systems to use and patent the information for industrial uses, often without further improvement and/or an additional “inventive step”. This has frequently happened without the consent of the holders of the resources and without compensation or sharing of profits. Concerned people and communities refer to this situation as “piracy of traditional knowledge”.

According to economic theories, in this informational nature of TK and genetic resources lie the causes for its loss: its value at present cannot be allocated and converted into economic values.

## **Influences of trade and development on TK**

### ***The interface of trade, biological diversity and TK***

The maintenance and evolution of TK is closely linked to the characteristics of the ecosystems in which it is “situated”. Because biological resources are traded primarily as goods for consumption, the system of trade in raw materials has a major influence on biological diversity and thus, indirectly, also on the maintenance of TK.

Trade liberalization favours the highest possible yield at the lowest possible cost. This promotes intensified utilization of resources, for example in timber production or farming.<sup>11</sup> Due to this intensification, the expansion of global markets and recent patterns of trade liberalization have had a double effect on traditionally sustained ecosystems and their biological diversity. While agricultural (crop) biodiversity is homogenized by standardizing food production and consumption (FAO, 1999), the conversion<sup>12</sup> and degradation of habitats are considerably accelerated by intensification of production or extensive utilization. Since the value of biodiversity cannot presently be calculated, landowners do not take account of its value in deciding how to utilize their property. The incentives of liberalized world trade thus favour destruction of biological diversity and contribute to environmental degradation and, therefore, indirectly to the loss of TK.

Yet the World Trade Organization (WTO) argues in its study on trade and environment (Nordström and Vaughan, 1999) that “environmental problems and trade are only indirectly linked”. It acknowledges that problems arise from the absence of markets for the valuable services provided by the environment. It attributes the resulting market failures to either missing integration of the externalities (i.e. environmental costs) or to undefined property rights. Yet it claims not to be the appropriate organization for dealing with environmental issues. As solutions to the problem, it suggests management schemes at the national level and more structured environmental cooperation among nations, a need which it views as being particularly urgent now that liberalization of international trade has reduced the regulatory autonomy of individual nations.

### ***The influence of trade and development on traditional cultures***

Along with trade’s direct influence on ecosystems, the liberalization and increase of trade, and in part also the development endeavours of industrialized countries to support the countries of the South in their struggle to improve their inhabitants’ quality of life, bring about cultural changes that can in turn lead to the loss of TK.<sup>13</sup> A similar process occurred in the North as a corollary of

the late-nineteenth-century Industrial Revolution. It therefore seems worthwhile to examine these experiences. According to Tanner (1996), in industrialized countries the loss of TK was closely linked to the evolution of formal research into and development of industries (e.g. the pharmaceutical industry). The preference for scientifically developed products, which were supported by intensive marketing efforts, led to undervaluing and abandonment of TK and, consequently, to its disappearance.

In farming systems, similar results might have been brought about by the active promotion and spread of the blueprint approach to development, with its emphasis on industrial agriculture, and the closely related Green Revolution. These endeavours have led to a preference for high-yielding varieties suited for industrial farming and international trade. While increasing food production, these varieties have often replaced the older, more robust and genetically diverse land races that had the potential to transmit genetic information created through the ages by farmers.

To summarize, it can be stated that international trade and development activities may influence TK in different ways: They may be directly and indirectly contributing to its disappearance, but at the same time, trade and development activities also offer opportunities to create incentives for the conservation, maintenance and further evolution of TK.

The author of this paper therefore submits that, in acknowledging only a minor link between trade and environment, the WTO underestimates its impact. Given that the absence of markets for the valuable but presently nonmarketable services provided by biological diversity is identified as the cause of the problem, and that the decline of biological diversity clearly has global significance, it is within the WTO framework that instruments to mitigate the negative effects of trade liberalization should be created.

Accordingly, it is proposed to establish within the framework of the WTO the necessary legal basis for the creation of economic incentives for conservation and sustainable use of biodiversity.

### ***Involved interests***

A variety of interest groups are involved in the conservation and sustainable use of biological diversity and the maintenance of TK in the context of trade:

- The overall global long-term interest in conserving genetic resources and related knowledge – that is, the interest in securing long-term food security and survival.
- The interest of supplying nation states, which have the authority to define access to genetic resources within their boundaries and which, according to the Convention on Biological Diversity,<sup>14</sup> are the recipients of the shared benefits from the use of these resources (Art. 15 (7) CBD).
- The interest of local and indigenous communities in sharing benefits resulting from the use of genetic information and related TK generated within their communities, and in the respect of their customary laws and institutions.
- The interest of national and international research, trade, and industry in easy access to information, in a clear and concise approach to access negotiations, and in timely granting of research permits.

A closer look at the above reveals three main types of interests: (1) the *economic* interests of the *providers* (the nation states and local people) as well as the *purchasers*: (2) the interest of the global community in *conservation and sustainable use* of biological resources; and (3) the interests of individual holders of information who would like to make *autonomous decisions* regarding its future use.

## **Aspects of the legal background and proposed solutions**

### ***Legal background***

The CBD links conservation of biodiversity with economic issues and addresses both conservation and sustainable use of biological resources. For the first time in international law of

nature conservation, it combines conservation issues with trade and the need to help economically poor states to attain development goals.<sup>15</sup>

The CBD implicitly recognizes the existence, value, and importance of TK. Article 8 (j) obliges parties to encourage sharing of benefits arising from the use of TK. However, this article contains an obligation to support and further advance TK in the context of conserving biological diversity; it does not contain a legal basis for creating an individual right. The obligation also leaves the legislation concerning this matter to the contracting parties (i.e. the national states). If no national legislation governing access to TK and the sharing of benefits from its use and/or governing the recognition of the customary laws of local communities and indigenous peoples has been enacted, the TK remains in the public domain.

One difficulty in regulating the field lies in the fact that CBD obligations bind states as contracting parties but confer no rights or obligations on private entities such as research institutes and indigenous communities. Without specific regulations at the national level, regulation of access and benefit sharing (ABS) is currently left to contracts between bioprospectors (bioprospecting firms or scientific institutes) and public authorities in donor countries. This contractual approach has several disadvantages. First, there is no obligation to include the actual owners of information in the ABS procedures. As a result, they cannot participate in decisions concerning the fate of their knowledge or profit from the results of their achievements. Second, the contractual solution lacks the authority to bind third parties and often implies a disparity in negotiating powers.

### ***Proposed solutions***

Various solutions and types of rights have been proposed in order to clarify the ABS regulations of the CBD, and/or to protect TK and the framework in which it is created. These can be divided into three main groups:

- First there is a series of proposals for noncompulsory codes of conduct for ABS, which aim to mitigate the fact that the CBD rules bind only States as contracting parties, not private purchasers, which, however, are the main stakeholders on the acquiring side.<sup>16</sup>
- A second proposal is to create a funding system, particularly in the domain of “farmers’ rights”.<sup>17</sup> Because of the special characteristics of plant genetic resources for food and agriculture (PGRFA), identifying individual holders of farmers’ rights can be very difficult, if not impossible. Therefore, Girsberger (1999), for instance, proposes the creation of nonexclusive rights to compensation in monetary and nonmonetary form. This compensation should be funded by those having an interest in the conservation of traditional PGRFA and those using these resources (i.e. national governments and formal plant breeders). The fund’s resources should be allocated on the basis of project proposals.<sup>18</sup>
- A third group of measures focus on the problem of allocating and documenting information and controlling lawful implementation by the purchasing states. Thus, for example, the Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) in India has developed TK databases.<sup>19</sup> Registers of TK are part of draft national legislation. Ideas exist for creating an international registry of TK (Cottier, 1998 and Drahos 2000), and proposals have been made to develop a World Information Network/ Information System on Plant Genetic Resources for Food and Agriculture and to strengthen existing systems<sup>20</sup> in the framework of the revision process of the International Undertaking<sup>21</sup> (IU).

There is also a proposal to create an international certification system. Countries providing resources and TK would issue certificates of origin proving that information has been lawfully acquired. These certificates should be included in the patent application procedure governing the use of genetic resources and/or TK (see e.g. Tobin, 1997).

Another proposal is to create so-called traditional intellectual property rights (TIP Rights) in the framework of the TRIPS Agreement (Cottier, 1998). These rights would have to be adapted to the characteristics of TK and designed to answer its specific protective needs. In particular, TIP Rights should encompass pre-existing TK relating to plant and animal genetic resources.

These propositions are presently discussed in a general and often very political and controversial way. Yet, in order to reach consensus in creating legal instruments to protect TK, the interests involved will have to be balanced. In this regard two points ought to be looked at more closely. First, the interests described are not necessarily competing. The creation of a win-win situation integrating the various interests can be imagined and ought to be aimed at. Second, in each case all interests cannot be served to the same degree. For example, for the spiritual knowledge of indigenous peoples, the autonomous decision over its tradition and future use has more weight than in the case of knowledge regarding the specific qualities of crop varieties. Solutions will have to take account of both the protective needs and the goals of the measures proposed.

In order to develop criteria for assessing these proposals, it is useful to examine some of the underlying economic and legal arguments.

## **Underlying economic and legal arguments**

### ***The non-internalization of costs and benefits***

As can be concluded from the above, and as was demonstrated by the UNCTAD Expert Meeting on TK, the maintenance of TK and biological diversity is a cross-cutting issue and needs to be considered in the widest possible context. It should therefore be integrated into general policy development procedures and also be considered at the interface between trade in, and conservation of, natural resources.

The signalling strategies that could be relevant in this context need to be based on the notion of “sustainable use”. Economic theory dealing with integration into a liberalized market system might give some indications as to possible solutions.

According to Johnston (1996), an important feature of the principle of sustainable use in an economic context lies in the approach of persuasion through incentives: “Sustainable use as an economic concept is ... about creating the right incentives so that those who manage biodiversity, the stakeholders, will be motivated to conserve it.” Economic theory holds that in order for a resource to be properly managed by market mechanisms, the price of that resource needs to reflect all the values that society places upon it. This means internalizing the external benefits and costs associated with using a resource. In environmental law, this principle is, as a rule, realized by the “polluter pays” principle: the environmental costs incurred in utilizing a resource (e.g. the cost of sewage treatment) are internalized into its price, thus creating an incentive to use the resource efficiently.

In the case of biodiversity and TK, however, the process of loss is driven by complex and diffuse causes. Furthermore, the value of TK and that of biological diversity are extremely difficult to assess in a market context. Therefore, the reverse strategy stays in the foreground: those who cause the loss of biodiversity do not have to pay for its restitution (even if that were possible), but ways and means must be found of making the benefits created by diversity and TK accrue to those nurturing and maintaining these resources. As an instrument to this end, the creation of property rights is proposed.

### ***The need to create incentives at the grassroots level***

In formal innovation systems, specific instruments for protecting the generated information — the intellectual property rights (IPR) — have been created in order to generate incentives fostering creativity and investment in formal research and development (R&D) processes. However, where the basic information is created by informal R&D processes — for example, by traditional breeders and indigenous peoples — no comparable instruments exist. Thus, the benefits of diversity and TK are appropriated at the industry level, far removed from the individuals creating the information. and making decisions concerning the utilization of their land (Swanson *et al.*, 1994, and Swanson and Göschl, 2000).

Swanson and Göschl (2000) conclude therefore that the current regime of IPR is “probably inadequate for the efficient management of the flow of information”. They suggest that property right regimes at the intermediate and supplier levels could be a means of redressing this

inefficiency. They conclude that, in order to maintain basic, grassroots-level innovation processes, incentives should be created at the level where the information is created – that is, at the level of indigenous and farming communities. Swanson proposes the creation of an “informational resource right” as a specific property right, tailored analogously to IPR, to protect the informational value of biogenetic information and allow the appropriation of the value of the information at the level at which it is generated.

### ***The principles of the “global public good”***

Biological diversity of domesticated and wild animals and plants and related TK are important to humanity for its long-term survival. Their conservation is therefore of global interest.

Agro-biodiversity is maintained by local subsistence farming systems as a side-effect of their striving to prevent food shortages. Local and indigenous people, in sustainably using and conserving wild resources (e.g. by actively nurturing wild plants or by forgoing the profits that could be reaped from extensive resource use) perform a service to humankind. However, currently the value of biodiversity is freely accessible to all, and the information it contains has no marketable value. These elements correspond to the characteristics of the “public good”.<sup>22</sup>

The difficulty faced by a public good is that, while all of society benefits from its use, because it is freely accessible, no market mechanisms for controlling its provision exist. Therefore, if the public good is to be maintained, specific measures are needed (Kaul *et al.* 1999; Swanson *et al.*, 1994). The public policy implication is that states and international regimes must play some role in the provision of such goods; otherwise, these goods will be undersupplied (Stiglitz, 1999). Stiglitz identifies two strategies for providing the public “knowledge” good: (1) issuing of IPR and (2) granting direct government support.

### ***The need for an international approach***

The CBD system of access to genetic resources and the fair and equitable sharing of benefits is – as was mentioned above – based on a bilateral, contractual approach between provider countries and purchasers (Art. 15) based on national legislation. Also, the WTO’s special study on trade and environment (Nordström and Vaughan, 1999) refers to the national level as the place for resolving the problems existing at the interface between trade and environment. The argument is that environmental problems are “best addressed at the sources, whether they involve polluting production processes or undefined property rights over natural resources”.

However, at the national and regional levels, the scope for resolving TK-related problems remains limited. The interest in TK and biogenetic information is characterized by its international dimension, the transfer mainly taking place between non-industrialized and industrialized countries. As is well known, this poses significant problems, in particular in view of the likelihood that the use of easily accessible information will be abused. Control over the rightful acquisition of the information, fulfilment of the terms of the contract, and sanctioning of infractions outside the jurisdiction of the national state are difficult. The benefit-sharing mechanisms are, apart from up-front payments, difficult to control, as they are based on mutual trust and require disclosure of the benefits and transparency with a view to determining net gains.

Thus it can be concluded that the scope for resolving problems at a national or regional level remains limited. Clearly, these issues call for international measures. Moreover, the global dimension of the interests involved leads to international responsibility, which in turn requires international solutions.

## **Conclusion**

There are different types of TK, and these require different types of protection. Instruments for protecting TK ought to be devised according to the differences between the types of information. Currently, concepts for protecting TK follow institutional criteria (e.g. the International Undertaking and the CBD).



From the above discussion, two principal instruments for protecting TK emerged: the creation of specific rights to traditional intellectual knowledge and the setting up of an international funding system. In this context it is important to remember important losses of welfare can be associated with the privatization of knowledge. This is obvious in the case of crop varieties, where open exchange is a basic prerequisite for further evolution of new varieties. However, it is true also for the customary exchange of TK (and also for the results of formal basic research). Therefore, in situations where open access to the information is crucial, direct public support for the provision of this “public-good information” is necessary.

However, the complexity of the protection of TK concerning biological diversity means that the problem cannot be addressed by a uniform and simple solution, but that additional supporting measures will be necessary. Action must be taken in several areas and in a multilayered approach encompassing rights, instruments, and institutions for their implementation, and other supporting measures. The following measures are proposed:

- To create the option to allocate specific rights to TK based on individual or community rights, wherever this is possible. The aim would be to integrate a basic right to TK into an international legally binding instrument, its detailed implementation being left to the competence of the nation states.
- To create a legal basis and mechanism for a funding system that generates incentives for owners.
- To introduce measures into the intellectual property procedures of the purchasing countries that control or verify the lawful acquisition of TK.
- To develop additional supporting measures and incentives – such as labelling, certification, auditing systems, and tax reductions – in the context of (international) markets and trade.

In further investigating these propositions, the following criteria are essential:

- Instruments to protect TK should create a sound basis for securing access to genetic resources and their exchange at the local, regional and international levels.
- The procedures for getting permission to access genetic resources and related TK must be clear, simple and not very time consuming.
- The owners of TK must be guaranteed freedom to decide on access to and – under defined conditions – control of its use.
- Incentives are most effective if applied at the level where the decisions are made (i.e. at the level of the farmers and/or the farming communities, or the nation states).
- Free exchange of knowledge at the community level and free exchange of research must be possible; in general, means must be found to minimize welfare losses caused by inadequate dissemination of knowledge.
- Customary laws governing the exchange of PGRFA and TK between farming families and communities should be maintained and supported. In particular, the option to create community rights to protect TK must be ascertained.
- Solutions should aim at minimizing transaction costs while maximizing efficiency and effectiveness.
- Ways and means must be found to guarantee simple, inexpensive and easily accessible procedures for protecting TK.

In order to find a consensus in creating legal instruments to protect TK, the involved interests will have to be balanced. Measures to protect TK must be assessed with this objective in mind. Some objectives and criteria may be contradictory, and this must be made transparent in the decision-making process if consensus regarding priorities is to be achieved. Not all criteria are equally important for the protection of the different types of knowledge, and it may be necessary to set priorities.

Further research is necessary to evaluate the political and practical feasibility of the proposed solutions and to work out the details of the measures. It is very important that the solutions be developed and evaluated with utmost care and in cooperation with the people concerned.



It is necessary for all sides to understand the different systems of creativity and innovation and to listen impartially to the ideas, wishes and needs of all stakeholders, in order to create a basis for transparency, confidence and mutual exchange. The time is past for mere political argumentation. What is needed for further research and discussion is sound information concerning the factual background of the problem in general, and in particular of the so-called informal knowledge systems, on the basis of mutual openness and respect. The UNCTAD Expert Meeting on TK was an impressive and valuable step in this direction.

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## Notes

- <sup>1</sup> The presented reflections are the result of research in progress, sponsored by the Swiss National Science Foundation (1998-2000) and the Swiss Agency for Cooperation and Development (2000-2003). Comments are very welcome (Susette.Biber-Klemm@unibas.ch).
- <sup>2</sup> Biological resources can – following the Convention on Biological Diversity's (CBD) definition of the term "genetic resources" – be characterised as "biological material, *i.e.*, any material of plant, animal, microbial or other origin, which has an actual or potential value" (See Art. 2 (7)). Biological resources include both domesticated and wild species of animal and plants. The notion encompasses resources found in *in-situ* (*i.e.* in their natural surroundings) as well as stored *ex-situ*, (outside their natural habitats, *e.g.* in gene banks or botanical gardens). The term is preferred here to the notion of "genetic resources" because also biochemical information plays a role in our context.
- <sup>3</sup> A crop variety bred and cultivated by farmers and adapted to local environmental conditions, in opposition to the "modern variety", a crop variety developed by modern plant breeders, which as a rule are designed to maximise yields at the expense of diversity or local environmental adaptation. (Jarvis D.I *et al.* (2000), 8).
- <sup>4</sup> See UNCTAD (2000 b) Nos 11-15.
- <sup>5</sup> UNCTAD (2000 a) p 44. Quote Plan of Action?
- <sup>6</sup> Geneva, 30 October – 1 November 2000.
- <sup>7</sup> See for example Daes (1997) 3.
- <sup>8</sup> Turmeric (*Curcuma longa*) is a key component of ayurvedic medicine and a traditional Indian home remedy. It has for thousands of years been used to treat sprains, inflammatory conditions and wound healing. See *e.g.* Grain (2000).
- <sup>9</sup> Neem (*Azadirachta indica*) is a native tree of India. It has been used for more than 4,000 years. Every part of the tree is useful, and has medicinal, cosmetic and pest inhibiting properties. It has such a variety of medical applications that it is sometimes referred to as the village pharmacy. See *e.g.* Grain (2000).
- <sup>10</sup> Ayhuasca (*Banisteriopsis cappil*) is grown by the indigenous peoples of the Amazon basin for medicinal use and religious ceremonies. It is central to the culture of many groups in the region. According to their cosmology, this is a sacred plant that has bestowed upon them their knowledge about nature, cures for many illnesses, and hallucinations that "show past and future". See *e.g.* Grain (2000).
- <sup>11</sup> Industrial agriculture, focusing on maximising commercially important yields and productivity through the use of monoculture systems and uniform technologies, including high yielding seeds, agrochemicals, irrigation, mechanised equipment and large infrastructure developments. (FAO 1999).
- <sup>12</sup> Swanson describes the "conversion process" as follows: 'for the benefit of economic development, the more productive assets, *e.g.* a cultivated lucerne variety, are substituted for the less productive, *e.g.* diverse native grasses. That means that uses are changed from diverse to specialised ones'. (1994).
- <sup>13</sup> In this context see *e.g.* Soloman, Ole Karbolo, and Oviedo in this volume.
- <sup>14</sup> As concluded at the occasion of the United Nations Conference on Environment and Development in Rio, 1992. Details see below.
- <sup>15</sup> The regulation of access to plant genetic resources for food and agriculture (PGRFA) and sharing the benefits from their use, has been delegated to the FAOs International Undertaking on Plant Genetic Resources, (IU). The conclusion of the CBD has initiated a revision of the IU, which after long and controversial deliberations is nearing its end. The issue of TK in relation to PGRFA was discussed under the heading of the so-called "Farmers' Rights" (see below FN 18). The revised text of the IU (Draft Revised IU, Commission on Genetic Resources for Food and Agriculture (CGIAR) 2001) will be submitted to the Thirty-first Session of the FAO Conference in November 2001, for approval. See also Biber-Klemm S (in print, 2001).
- <sup>16</sup> A case in point: the Draft Guidelines on Access and Benefit Sharing Regarding the Utilisation of Genetic Resources: A Proposal of International Guidelines by Switzerland, Presented to the Fifth

Conference of the Parties of the Convention on Biological Diversity. Kopse and Girsberger, this volume.

- <sup>17</sup> The Draft Revised IU does not define “Farmers Rights”. According to its Art. 10, the realization of Farmers Rights includes 1) the protection of traditional knowledge relevant to PGRFA, 2) the right in equitably sharing the benefits from their use and 3) the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA. The responsibility for the realization of the Farmers Rights rests with national governments, “in accordance with their needs and priorities” and “as appropriate and subject to .. national legislation”
- <sup>18</sup> Funding devices are integrated e.g. into the International Undertaking (Annex III, Para. 3. 3), and into the CBD (Art. 21). Negotiations on the funding mechanism in the revised IU were difficult and lead to a – at first view – rather vague concept (see Art. 19 of the Revised Draft IU).
- <sup>19</sup> For more examples see Dutfield G. (2000).
- <sup>20</sup> E.g. the System-wide Information Network for Genetic Resources (SINGER) of the Consultative Group on International Agricultural Research (CGIAR).
- <sup>21</sup> See Art. 17 of the Revised Draft IU.
- <sup>22</sup> The notion of “public good” is defined by two main qualities: 1) its benefits are non rivalrous in consumption, i.e. their utilisation by one person does not exclude the utilisation by others and 2) its benefits are non excludable, i.e. it is extremely difficult and costly to exclude others from the utilisation of the good (Kaul *et al.*, 1999).
- <sup>23</sup> The presented text is based on the following publications by the author. Please refer to these texts for more detailed argumentation:  
The Management of Genetic Diversity in Agroecosystems: The Role and Function of Law to Conserve Genetic Diversity and to Support its Community based Management. Proceedings of the International Conference on Science and Technology for Managing Plant Genetic Diversity in the 21<sup>st</sup> Century. Kuala Lumpur, Malaysia, 12-16 June 2000 (2001);  
*Intellectual Property Rights and Traditional Knowledge: The national and international levels.* Proceedings of the Workshop on Effects of Modern Biotechnology on Biodiversity: Proposals for Action. Berne, March 9-11 2000 (2001);  
Intellectual Property, Genetic Engineering, and Sustainable Development: Incentives to Bring about Conservation and Sustainable Use of Genetic Resources in the Framework of the World Trade Order. Proceedings of the World Trade Forum on Intellectual Property, Berne, August 17-28, 1999, Michigan University Press (March 2001).  
*Biotechnology and Traditional Knowledge – In search of Equity.* Proceedings of the International Conference on Biotechnology in the Global Economy, 2-3 September 1999, Centre for International Development at Harvard University, in: International Journal for Biotechnology, Vol. 2, Nos 1/2/3, 2000, 85-102.



# THE USE AND SAFEGUARDING OF FOLK HANDICRAFT AS *SUI GENERIS* INTELLECTUAL PROPERTY

Vlasta Ondrusova

## Introduction

Traditional folk culture and folklore have an intrinsic value for human culture. However, they also have an economic value, which turns them into a commodity subject to the play of market forces. Thus the means and methods of protecting the resources against inappropriate commercialization must take into account how they are exploited.

Commercialization of traditional folk culture and folklore is a highly diversified area in some countries. The influence of new information technologies, the media, international tourism and the development of market economies has transformed various expressions of traditional folk culture and folklore from interpersonal communication to global technical communication. These manifestations of creative human endeavour have become a part of our cultural heritage and have undergone certain “innovations” leading to their homogenization for the development of “products” that appeal to the present-day mass culture catered to by the market economy and the global information society.

Thus one can witness how traditional folk culture and folklore develop in response to changing societal conditions. Such changes became noticeable in the second half of the 19th century. During this process some elements disappeared while others went through a natural process of evolution through improvisation. With the passage of time these changes accelerated the process of transformation and many elements of traditional culture and folklore either disappeared or changed drastically.

This period was characterized by a conscious effort to record various stages of the change process. These records constitute the consciously protected cultural heritage of nations, provide a foundation for new cultural activities and lead to the continuous development of culture.

## Commercialization of traditional folk culture and folklore

The sale and purchase of material and intellectual commodities is a natural phenomenon and a precondition for the development of human society. This includes traditional folk culture and folklore, which in its complexity reflects the human creative urge. These fruits of human endeavour should be regulated—for example, by copyright rules for the protection of intellectual heritage.

Traditional folk culture and folklore is not only a part of our heritage that has remained alive either in its old form or in a drastically changed one. It also represents a source for new cultural incentives and activities that, in many cases, can contribute to a country’s economic growth by increasing revenue from tourism and other income-generating activities. Its protection is therefore important and should be supported. Countries should protect not only the folklore, dance and music of traditional folk culture but also technologies relating to handicrafts, folk art and other forms of human endeavour in this area by means of legal instruments that protect intellectual property. Every global decision about the further development of our society should be considered in light of its impact on the safeguarding and development of traditional folk culture. Preserved elements of traditional culture serve as inspiration for individual creative activities whose products can be commercialized.

## Traditional knowledge in environmental conservation

When people strive to make their everyday lives different and richer by applying, directly or indirectly, the values of traditional folk culture and folklore, they are using these as a bulwark against cultural levelling-out and globalization and, to some extent, as an antidote to the devel-

opment of universal, all-embracing sophisticated technology. The importance of traditional craft technologies lies not only in their economic value and aesthetic functions but also in the fact that they often use materials from renewable resources and are consequently friendly to the environment.

We can see efforts to maintain traditional patterns and processes in cases where artisans have modified the “vocabulary” of their creations to meet the requirements of contemporary consumers such as interior designers and tourists. In evaluating this state of affairs, it is important to remember that the development of folk crafts, or at least their preservation, is reasonable only if it responds to current needs. Thus products can indisputably adopt a modern style but should bear the stamp of their ethnic and regional origin with respect to technology, materials and artistic expression.

## **The need for legal instruments for protecting TK**

The creation of new legal instruments for the protection of cultural products requires a thorough assessment of existing national legislations of affected countries. The assessment must cover legal provisions for copyright, protection of works of art, performances, rights of authors and interpreters of traditional folk culture and folklore. It should assess whether the enacted laws are actually enforced and should take into account the global information dissemination infrastructure and the concomitant protection of relevant databases.

The protection of databases of information relating to particular areas of traditional folk culture and folklore is not always clearly defined in regulations for intellectual property protection. Specifically, no specific organization has been entrusted with the task of overseeing copyright control and monitoring its application, even when no payment is involved. In 1995 the European Community Commission issued a Green Book which deals with copyrights and neighbouring rights in the global information society, pointing out the need for close international cooperation since digital technologies make possible the unconstrained dissemination of a large amount of information. The document emphasizes that technology issues will significantly affect the enforcement of copyrights related to works of science and art as well as the protection of databases themselves.

The guideline proposal of the European Parliament and the Council of European Community on the Harmonisation of certain aspects authors’ rights and neighbouring rights in the society of information, published in 1996, covers protection for authors whose works are in the database. This guideline identifies both natural and legal persons as being able to exercise rights to protection. The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) deals with the protection of databases.

For building an effective European information infrastructure in which intellectual property rights play a central role, a comprehensive range of cultural identity and language issues must be examined. Traditional culture and folklore will play a key role in this process.

This implies that society should be able to administer and control rights to a growing number of eligible outputs. An organization for the administration of all copyrights and neighbouring rights is essential for establishing and maintaining effective supervision over the use of works and performances related to traditional culture and folklore.

## **Recommendations**

For technologies related to traditional handicrafts, art and other creative forms, the focus (with the help of international organizations like UNCTAD) should be on:

- Developing and regularly updating an identification system for traditional folk culture and folklore;
- Drafting legal provisions protecting intellectual property relating to specific features of traditional folk culture and folklore;
- Using the full potential of legal provisions protecting traditional folk culture and folklore, including those related to industrial property aspects, which ensures the protection of traditional handicraft technologies and patterns;



- Establishing organizations for public administration of copyright and neighbouring rights which would deal with expressions of traditional folk culture and folklore, or, if necessary, extending the powers of existing organizations to cover this area as well;
- Making the creators of traditional folk culture (folk artists, performers, artisans, etc.) aware of their rights in the area of intellectual property. These issues should also be communicated to associations of artisans and to dealers in such products;
- Fostering the establishment of civic associations for traditional folk culture and folklore which would, in cooperation with organizations for public administration of copyright and neighbouring rights, monitor whether elements of traditional folk culture and folklore, considered by copyright protection law as right-free works, are used in a way corresponding to their value;
- Supporting museum and archives holding traditional folk culture and folklore collections and databases in their efforts to monitor how the collections and databases are used for present interpretation or for production purposes in their respective countries;
- Encouraging efforts for comprehensive protection of collections and databases against abuse and devaluation while emphasizing their cultural and educational value to the general public; and
- Encouraging educational institutions, mainly schools, to introduce classes in traditional folk culture and folklore for children and youth and to use this subject as a means for developing tolerance and understanding.

Due to the wide variety of traditions and cultures, there can be no universal guidelines for protecting various art forms against inappropriate commercialization. However, several principles and mechanisms for safeguarding these traditions and cultures can be developed. Perhaps the most important one is educational activity, since protection of traditional folk culture is possible only if knowledge and information about them is widely disseminated. Currently available instruments suitable for this purpose include nationally and internationally adopted regulations for protecting intellectual property. These cover, or should cover, many works of traditional folk culture and folklore. Another suitable instrument is building public awareness of the importance of folk culture, as this will help the public distinguish between authentic products and imitations.



# TRADITIONAL KNOWLEDGE AND THE CONVENTION ON BIOLOGICAL DIVERSITY

## Note by the Executive Secretary, Secretariat of the Convention on Biological Diversity

### Introduction

This note<sup>1</sup> describes progress made to date under the Convention on Biological Diversity (CBD) in promoting understanding of the role of traditional knowledge (TK) in the conservation and sustainable use of biological diversity, and in assisting discussions of the UNCTAD Expert Meeting by drawing attention to the relevant decisions of the Conference of the Parties (COP) to the Convention. The note provides background information on Article 8(j) and related provisions under the Convention.

In line with past decisions, at its fifth meeting in Nairobi in May 2000, the COP reiterated its call for collaboration with a number of relevant intergovernmental organizations and institutions. The CBD Secretariat continues to liaise closely with the World Intellectual Property Organization (WIPO) on matters relating to the protection of the TK of indigenous and local communities: It also collaborates with other organizations such as the World Trade Organization (WTO), the Commission on Human Rights, the Food and Agriculture Organization (FAO), the United Nations Forum on Forests, other environmental conventions, and UNCTAD in activities relating to the need to respect, preserve, maintain and protect the TK, innovations and practices of indigenous and local communities, and in their recognition and promotion of the role that such communities and their TK play in the conservation and sustainable use of biological diversity.

The term “traditional knowledge” (TK) refers in this paper to “the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity” referred to in Article 8(j), as well as “indigenous and traditional technologies” referred to in Article 18.4. The phrase “protection of traditional knowledge, innovations and practices” is here interpreted as meaning not only the protection of such knowledge, innovations and practices through the application of legal and other appropriate means of protection, but also the respecting, preserving and maintaining of such knowledge, innovations and practices in accordance with Article 8(j).

### TK-related provisions of the Convention

Numerous provisions of the Convention are relevant to the work of the expert meeting. These provisions concern the following areas:

- The objectives of the Convention, namely, the conservation of biological diversity, the sustainable use of biological resources and the equitable sharing of benefits from the use of these resources (Article 1)
- Recognition of the close dependence of indigenous and local communities on biological resources and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components (Preamble, paragraph 12)
- Recognition of the vital role that women play in the conservation and sustainable use of biological diversity and the need for their full participation at all levels of policy-making and implementation (Preamble, paragraph 13)
- The undertaking of Parties to respect, preserve and maintain TK, innovations and practices relevant to the conservation and sustainable use of biological diversity; to promote their wider application with the approval and involvement of the holders of such knowledge; and to encourage the equitable sharing of benefits arising from the application of such knowledge, innovations and practices (Article 8j)

- Protecting and encouraging customary use of biological resources in accordance with traditional cultural practices (Article 10c)
- The exchange of information relevant to the conservation and sustainable use of biological diversity to include, *inter alia*, indigenous and traditional knowledge (Article 17.2)
- In cooperation for the development and use of technologies, the inclusion of indigenous and traditional technologies relevant to the pursuit of the objectives of the Convention Article 18.4.

## COP decisions on Article 8(j) and related provisions

Since the Convention entered into force on 29 December 1993, the COP has made a number of decisions on the implementation of Article 8(j) and its related provisions, namely Articles 10(c), 17.2 and 18.4, and has addressed the implementation of these provisions as a cross-cutting issue in relation to other thematic and sectoral areas addressed under the Convention. The principal decisions of the COP that address Article 8(j) and related provisions are decisions III/14, IV/9 and V/16.

**Decision III/14** established an intersessional process that included a workshop on Traditional Knowledge and Biological Diversity in Madrid, Spain, in 1997. The workshop produced two important outcomes: the development of a set of options for a work programme on the implementation of Article 8(j) for the consideration of COP IV in 1998 and recognition of the need to establish a body to specifically address the implementation of Article 8(j).

Also important is **Decision III/17**, paragraph 1 (d), which concerns the need to consider the role of intellectual property rights in implementation of the Convention. The COP decided that the need to protect the TK of indigenous and local communities must also be considered and that a common appreciation of their relation to provisions under other agreements, such as the WTO Agreement on Trade-Related Aspects of Intellectual Property (TRIPS), needed to be developed.

At the COP IV meeting in Bratislava, Slovakia, in 1998, a number of decisions were taken recognizing the importance of the TK of indigenous and local communities and of their involvement in the work of the Convention. Key elements of **Decision IV/9** included the establishment of the Ad Hoc Open-Ended Intersessional Working Group on Article 8(j) and Related Provisions; an invitation to submit case studies; and the development of a work programme.

The Ad Hoc Working Group on Article 8(j), at its first meeting in Seville, Spain, in 2000, discussed a number of issues concerning the application and development of legal and other forms of protection for TK; prioritization of the work programme; the participation of indigenous and local communities in the work of the Convention; and strengthening of cooperation among indigenous and local communities.

The fifth COP meeting was held in Nairobi, Kenya, from 15 to 26 May 2000. **Decision V/16** is the principal decision concerning the implementation of Article 8(j) and related provisions. The main elements of this decision concern the following:

- Extension of the mandate of the Ad Hoc Open-Ended Intersessional Working Group on Article 8(j) and related provisions established by Decision IV/9
- Adoption of a programme of work for the Working Group
- Promotion of the full and effective participation of indigenous and local communities, and particularly women, in implementation of the Convention
- Protection of the TK of indigenous and local communities relevant to the conservation and sustainable use of biological diversity

**Decisions III/14, IV/9 and V/16** emphasize the development of appropriate and effective mechanisms for the protection of the TK of indigenous and local communities. Parties were therefore invited to undertake a number of actions:

- Conduct case studies on the influence of international instruments, intellectual property rights, current laws and policies on the protection of TK
- Recognize the potential importance of *sui generis* and other systems of protection
- Assess the effectiveness of existing legal and other forms of protection

- Exchange information and experiences regarding national legislation and other measures for protecting TK
- Develop TK registers

To facilitate the full and effective participation of indigenous and local communities in the implementation of the Convention, in **Decision V/16** the COP urged Parties and Governments, international organizations and organizations representing indigenous and local communities, *inter alia*, to provide case studies on methods and approaches that contribute to the preservation of TK, innovations and practices, including through their recording, where appropriate, and that support control and decision-making by indigenous and local communities over the sharing of such knowledge, innovations and practices.

The COP on Decision V/16 also:

- Took into account the importance of the proposals for action on traditional forest-related knowledge of the Intergovernmental Panel on Forests/Intergovernmental Forum on Forests as an important part of the programme of work;
- Encouraged the participation of indigenous and local communities in the work of the Ad Hoc Open-Ended Working Group on Access and Benefit Sharing on the development of guidelines and other approaches to ensure the respect, preservation and maintenance of TK, innovations and practices;
- Invited Parties and Governments to exchange information and share experiences regarding national legislation and other measures for the protection of TK, innovations and practices; and
- Recognized that the maintenance of TK, innovations and practices depends on the maintenance of cultural identities and the material base that sustains them.

### ***The programme of work***

Most importantly, Decision V/16 adopted and prioritized a programme of work that is laid out in the annex to the Decision and for which 17 tasks have been identified. These tasks are to be undertaken in two phases. The first phase involves nine of the 17 tasks; the second phase addresses the remaining eight. The programme of work covers participatory mechanisms, status and trends, traditional cultural practice, equitable sharing of benefits, exchange and dissemination of information, and monitoring and legal matters. Steps are now being taken to implement the first phase of the programme.

The COP requested the second meeting of the Ad Hoc Working Group on Article 8(j) to prepare advice and recommendations on the following:

- a) Development of guidelines for the development of mechanisms, legislation and other appropriate initiatives with regard to equitable sharing of benefits; prior informed consent; and the identification of the obligations of countries of origin, as well as Parties and Governments where TK, innovations and practices of indigenous and local communities and associated genetic resources are used (Task 7);
- b) Development of guidelines for the conduct of cultural, environmental and social impact assessments regarding any development proposed to take place on sacred sites or on lands or waters occupied or used by indigenous and local communities (Task 9); and
- c) Development of guidelines to assist Parties in the development of legislation or other mechanisms to implement Article 8(j) and related provisions (Task 12).

The Working Group was also to undertake an assessment of existing subnational, national and international instruments relevant to the protection of TK, innovations and practices in order to identify synergies between these instruments and the objectives of Article 8(j) (Task 11).

### **The CBD and Trade**

The text of the Convention does not explicitly refer to trade measures, nor does the Convention generally prescribe specific measures. The provisions of the Convention, with a few exceptions, set goals. The specific measures required to achieve these goals are largely the prerogative of the Parties.

The Convention does, however, contain a number of provisions that are generally understood to require measures by Parties that could have consequences for trade. Provisions of the Convention often characterized in this way include:

- Article 6(b), which calls on Parties to “integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies”.
- Article 7(c), which calls on Parties to “identify processes and categories of activities which have or are likely to have significant adverse impacts on the conservation and sustainable use of biological diversity, and monitor their effects”. Article 8(l) then provides that Parties shall as far as possible “regulate or manage the relevant processes and categories of activities” so identified.
- Article 10(b), which provides that Parties shall “adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity”.
- Article 11, which calls on Parties to “adopt economically and socially sound measures that act as incentives for conservation and sustainable use of components of biological diversity”.
- Article 14, which requires Parties to introduce environmental impact assessment procedures.
- Article 15, which establishes a basis for the regime for access to genetic resources based on the fair and equitable distributions of the benefits arising from their use.
- Articles 16 and 19, which require Parties to take measures to promote transfer of relevant technologies.

### **Incorporating Article 8(j) into consideration of thematic and sectoral issues under the Convention**

A number of other important decisions were made, in addition to V/16, at the fifth meeting of the COP relevant to the implementation of Article 8(j) and related provisions. A number of these decisions contain additional activities related to trade measures. These activities include:

- Forest biological diversity (Decision V/4)
- The programme of work on agricultural biological diversity (Decision V/5)
- The ecosystem approach (Decision V/6)
- Incentive measures (Decision V/15)
- Financial mechanism and guidance to the Global Environment Facility (Decisions V/12 and V/13);
- Biological diversity and tourism (Decision V/25)
- Access to genetic resources (Decision V/26):
- Access and benefit-sharing arrangements
- The relationship between intellectual property rights and the relevant provisions of the WTO TRIPS Agreement.

This ensures that implementation of Article 8(j) is an integral part of all the work programmes and thematic areas under the Convention.

#### **Forests**

Under **Decision IV/7** a programme of work was adopted for forest biological diversity, the objectives of which include the identification of:

- Traditional forest systems of conservation and sustainable use of forest biological diversity and promotion of the wider application, use and role of traditional forest-related knowledge in sustainable forest management and the equitable sharing of benefits, in accordance with Article 8(j) and other related provisions of the Convention; and
- Mechanisms that facilitate the financing of activities for the conservation, incorporation of TK and sustainable use of forest biological diversity, taking into account that activities should be complementary to, and should not duplicate, existing efforts.



In **Decision V/4** the COP invited Parties, countries, international organizations, institutions and processes and other relevant bodies, as well as indigenous and local communities and non-governmental organizations, to provide relevant information on the implementation of the work programme through, *inter alia*, case studies, entries in national reports and other means, as appropriate.

### **Agriculture**

**Decision III/11**, on conservation and sustainable use of agricultural biological diversity, establishes a multi-year programme of activities to promote the positive effects and mitigate the negative impacts of agricultural practices on biological diversity. The programme also aims to promote the conservation and sustainable use of genetic resources of actual or potential value for food and agriculture and the fair and equitable sharing of benefits from the use of genetic resources. In this decision, the COP acknowledged the role that trade measures will play in achieving these aims. Accordingly, the COP encouraged the WTO, through its Committee on Trade and Environment, to consider developing a better appreciation of the relationship between trade and agricultural biodiversity. At its fourth and fifth meetings, the COP reconfirmed the importance of trade measures by requesting the Secretariat to apply for observer status with the WTO Committee on Agriculture.

The COP indicated that identification of appropriate marketing and trade policies in the context of incentives that enhanced positive and mitigated negative impacts of agriculture would be an important activity for the programme of work. Furthermore, the COP requested the Executive Secretary to collaborate with relevant organizations to gather information and case studies on this topic.

In **Decision V/5** the COP recognized the need to better understand the implications with respect to intellectual property rights of genetic use restriction technologies and how they might relate to farmers' rights and the implementation of Article 8(j) on the knowledge, innovations and practices of indigenous and local communities. The COP also emphasized the linkages between its work on agriculture and that relating to access to genetic resources, and particularly the ongoing revision of the FAO International Undertaking on Plant Genetic Resources to bring the latter into harmony with the Convention.

In this decision, the COP also recognized the importance of indigenous and local communities in the conservation and sustainable use of plant genetic resources according to Article 8(j) of the Convention. Taking into account the revision of the International Undertaking on Plant Genetic Resources for Food and Agriculture, it was also requested that the Executive Secretary discuss with relevant expert organizations, and with representatives of indigenous and local communities, the potential impacts of the applications of genetic use restriction technologies on those communities and on farmers' rights in keeping with the revision of the International Undertaking to keep, use, exchange and sell seed or propagating material and to prepare a report to be considered by the COP.

### **The Ecosystem approach**

The COP endorsed the description of the ecosystem approach and operational guidance contained in sections A and C of the annex to Decision V/6, recommended the application of the principles contained in section B of the annex as reflecting the present level of common understanding, and encouraged further conceptual elaboration and practical verification.

Of the 12 complementary and interlinked principles that together comprise the ecosystem approach, Principle 11 states that the ecosystem approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

In paragraph 3 of Decision V/6 the COP invited Parties, other Governments and relevant bodies to identify case studies and implement pilot projects, and to organize, as appropriate, regional, national and local workshops and consultations to enhance awareness, share expe-

riences (including through the clearing-house mechanism), and strengthen regional, national and local capacities with regard to the ecosystem approach.

### ***Incentive measures***

The Convention recognizes that, if its objectives are to be achieved, developing countries need to be able to participate fully and effectively in the Convention's processes. Because of capacity restraints, most developing-country Parties need help in ratifying the Convention, implementing its provisions and participating in its decision-making processes.

The fact that most biological diversity resides within developing countries has meant that the Convention contains an extensive array of provisions addressing these needs. For example, the Convention contains provisions addressing transfer of technology (Articles 16 and 19); market incentives (Articles 10 and 11); capacity building (Articles 12 and 18); financial support for implementing the Convention (Articles 20 and 21); participating in decision-making (Decision IV/17); awareness-raising (Article 13); scientific and technical cooperation (Article 18); research and training (Article 12); exchange of information (Article 17); sustainable use of biological diversity (Article 10); and incentive measures (Article 11).

In paragraph 4 of **Decision V/15**, the COP decided to integrate actions on incentives in thematic work programmes and ensure synergy with activities relating to sustainable use, noting that incentive measures were essential elements in developing effective approaches to conservation and sustainable use of biological diversity, especially at the level of local communities.

### ***Financial mechanism***

The Convention contains numerous mechanisms and provisions for helping developing-country Parties implement the Convention. An important aspect of these commitments is the financial resources provided by the financial mechanism to developing-country Parties. Article 5 of the Convention provides that Parties shall cooperate either directly or through competent international organizations.

The financial mechanism plays an important role in addressing the capacity-building needs of indigenous and local communities. In Decision IV/8, paragraph 4(d), the COP requested that the financial mechanism give special emphasis to the following programme priorities to fund initiatives by eligible Parties, *inter alia*, within biodiversity projects, other specific benefit-sharing initiatives such as support for entrepreneurial developments by local and indigenous communities, facilitation of financial sustainability of projects promoting the sustainable use of genetic resources and appropriate targeted research components. This decision is also restated with regard to the Global Environment Facility (GEF) in Decision IV/13, paragraph 8.

The COP, in decision V/13, provides additional guidance to the Global Environment Facility in the provision of financial resources in conformity with Decisions I/2, II/6, III/5 and IV/13 of the Conference of the Parties. The GEF shall provide financial support to developing-country Parties for country-driven activities and programmes, consistent with national priorities and objectives, recognizing that economic and social development and poverty eradication are the first and overriding priorities of developing countries. The GEF, as the institutional structure operating the financial mechanism, should provide support, *inter alia*, for implementation of the priority activities identified in the programme of work on Article 8(j) and related provisions, in accordance with Decision V/16.

### ***Biological diversity and tourism***

In paragraph 1 of decision V/25, the COP endorsed the assessment of the linkages between biological diversity and tourism contained in the annex to the decision, which includes the economic importance of tourism and its relationship to the conservation and sustainable use of biological diversity, as well as the potential impacts of tourism on biological diversity (including economic, social and environmental impacts).

In paragraph 4, the COP recommended that Parties, Governments, the tourism industry and relevant international organizations, in particular the World Tourism Organization, consider this assessment as a basis for their policies, programmes and activities in the field of sustainable tourism. It encouraged them to pay particular attention to issues such as the following:

- The unique role of eco-tourism (tourism that relies on the existence and maintenance of biological diversity and habitats) and the need for clear strategies for developing sustainable eco-tourism sectors with full and effective participation and viable income-generating opportunities for indigenous and local communities.
- The need to develop, with all potential stakeholders, strategies and plans based on the ecosystem approach and aiming at a balance between economic, social, cultural and environmental concerns, while maximizing opportunities for the conservation and sustainable use of biological diversity, the equitable sharing of benefits, and the recognition of TK, in accordance with Article 8(j) of the Convention, and seeking to minimize risks to biological diversity.
- Tangible benefits to local economies, such as job creation and the sharing of benefits arising from the sustainable use of biological diversity for tourism purposes. In this regard, small and medium-sized enterprises can play a major role.
- The fact that, in order to contribute to the sustainable use of biological diversity through tourism, there is a need to implement a flexible mix of instruments such as integrated planning, multi-stakeholder dialogue that includes indigenous peoples, zoning in land-use planning, environmental impact assessments, strategic environmental assessment, standards, industry performance-recognition programmes, recognized accreditation bodies, eco-labelling, codes of good practice, environmental management and audit systems, economic instruments, indicators and limits regarding the carrying capacity of the natural areas.
- The importance for the involvement and the need for the participation of indigenous and local communities and their interface with other sectors in the development and management of tourism, as well as their monitoring and assessment, including cultural and spiritual impacts.
- The importance of the understanding of the values and knowledge of use of biological diversity held by the indigenous and local communities and opportunities that these offer for sustainable tourism and the support of local tourism.

In paragraph 7, the COP encourages Parties, Governments, the tourism industry and relevant organizations to undertake activities including local capacity building.

### ***Access and benefit-sharing arrangements***

In paragraph 11 of Decision V/26A, the COP established an Ad Hoc Open-Ended Working Group composed of representatives, including experts, nominated by Governments and regional economic integration organizations, with the mandate to develop guidelines and other approaches for submission to the COP and to assist Parties and stakeholders in addressing the following elements as relevant to access to genetic resources and benefit-sharing, *inter alia*: terms for prior informed consent and mutually agreed terms; roles, responsibilities and participation of stakeholders; relevant aspects relating to *in situ* and *ex situ* conservation and sustainable use; mechanisms for benefit-sharing, for example, through technology transfer and joint research and development and means to ensure the respect, preservation and maintenance of knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation and sustainable use of biological diversity, taking into account, *inter alia*, work by the WIPO on IPRs.

To build capacity for access and benefit-sharing, the Open-Ended Working Group was to consider issues of capacity-building. Paragraph 14 noted that further development of capacities regarding all aspects of access and benefit-sharing arrangements is required for all stakeholders including, *inter alia*, indigenous and local communities, and that key capacity-building needs include means of protecting TK associated with genetic resources.

The COP also noted in paragraph 15 that the Panel of Experts on Access and Benefit-Sharing, established by Decision IV/8, was not able to reach any conclusions about the role of intellectual property rights in the implementation of access and benefit-sharing arrangements, and that the panel developed a list of specific issues requiring further study. These issues are listed in the Report of the Panel of Experts on Access and Benefit-Sharing (doc. UNEP/CBD/COP/5/8), whose paragraphs 130 and 131 are of particular relevance:

- The Panel considers that, in relation to the protection of TK, the COP should consider how to facilitate progress in relation to the following issues:
- Defining relevant terms, including the subject matter of TK and the scope of existing rights
- Determining whether existing intellectual property rights regimes can be used to protect TK
- Options for development of *sui generis* protection of TK rights

The Panel also felt that there was a need to do the following:

- Study the relationship between customary laws governing custodianship, use and transmission of TK on the one hand, and formal intellectual property systems on the other.
- Run pilot projects enabling holders of TK, including indigenous peoples, to test means of protecting TK that were based on existing intellectual property rights, *sui generis* possibilities, and customary laws.
- Ensure that granting intellectual property rights did not preclude continued customary use of genetic resources and related knowledge.
- Take into account the work of all other relevant bodies, including at the community, national, regional and international levels, and in particular the work of bodies under the Convention on Biological Diversity such as the Ad Hoc Open-Ended Working Group on Article 8(j) and Related Provisions and the clearing-house mechanism, and the work of other international organizations such as the United Nations Educational, Cultural and Scientific Organization (UNESCO), WIPO, WTO and FAO.

The COP, in Decision V/26A, invited Parties and relevant organizations to submit to the Executive Secretary information on a set of specific questions regarding the role of intellectual property rights issues by 31 December 2000 and requested that the Executive Secretary (see document UNEP/CBD/COP/5/8, paragraphs 127 to 138), on the basis of these submission and other relevant material, report on these issues to the second meeting of the Panel of Experts on Access and Benefit-Sharing, or the first meeting of the Ad Hoc Open-Ended Working Group.

### ***IPRs and the TRIPS Agreement***

The Conference of the Parties emphasized that further work was required to develop a common appreciation of the relationship between intellectual property rights and the relevant provisions of the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement) and the CBD, in particular on issues relating to technology transfer and conservation and sustainable use of biological diversity and the fair and equitable sharing of benefits arising out of the use of genetic resources, including the protection of knowledge, innovations and practices of indigenous and local communities.

The COP has repeatedly stressed the need to ensure consistency in implementing the CBD and the WTO Agreements, including the TRIPS Agreement, in order to promote increased mutual supportiveness and integration of biological diversity concerns and the protection of IPRs. In Decision IV/15, the COP specifically invited the WTO to consider how to achieve these objectives in light of Article 16, paragraph 5 of the CBD, taking into account the planned review of Article 27.3(b) in 1999 of the TRIPS Agreement. As in Decision V/16, in Decision V/26B, paragraph 1, the COP reaffirmed the importance of *sui generis* and other systems for protecting the TK of indigenous and local communities and ensuring the equitable sharing of benefits arising from its use. In these decisions, the COP also requested that the Executive Secretary transmit these decisions and its findings to the secretariats of WTO and WIPO. In Decision V/26B, paragraph 2, the COP also invited the WTO to acknowledge relevant provi-

sions of the CBD, to take into account the fact that they are related to the provisions of the TRIPS Agreement, and to further explore this relationship.

## Notes

- <sup>1</sup> This note is based on the topics that were to be addressed at the UNCTAD Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices of Indigenous and Local Communities (Geneva, November 2000) as provided by the UNCTAD Secretariat in document TD/B/COM.1/EM.13/2.





# INTELLECTUAL PROPERTY AND TRADITIONAL KNOWLEDGE: THE WORK AND ROLE OF THE WORLD INTELLECTUAL PROPERTY ORGANIZATION (WIPO)

Shakeel T. Bhatti

## Introduction

Traditional knowledge is naturally cherished as an important part of the cultural heritage and historical identity of many Indigenous and local communities, as well as many nations and regions with a shared cultural history. In a development context, the active conservation and protection of traditional knowledge is increasingly considered as an important component for a bottom-up approach to development. Such an approach builds upon the local knowledge base of the country or community in question, rather than seeking to provide traditional societies with what they purportedly lack. In such an approach, the role of the state or international agencies is not merely to provide communities or countries with the know-how, information and modern technologies that they need, but also to enhance and reinforce the detailed and precise know-how that they already hold. Such approaches seek to better utilize and harness the great potential that traditional knowledge and grassroots innovations have for improving local livelihood conditions and sustainably utilizing natural resources. Traditional knowledge is thereby recognized as an important source of innovation for improving local livelihoods and sustainable resource use, which has been underutilized in the past. As the title of this conference indicates, the challenge for policymakers is to find ways of harnessing traditional knowledge for development in a manner which respects and enhances the intellectual and cultural vitality and integrity of communities, the customary laws and protocols which they apply to such knowledge, and the sustainability of natural resource use guided through the knowledge.

Within this context, the present paper describes WIPO's existing work program on the protection of traditional knowledge, innovations and creativity. It summarizes WIPO's past, present and future activities and concludes with some reflections on the roles of WIPO and other intergovernmental agencies in the protection of traditional knowledge (TK). It draws attention to the intellectual property protection needs of TK holders in developed and developing countries and describes the initiatives taken to address these needs.<sup>1</sup>

## Use of terms and scope of the paper

Two uses of the term 'traditional knowledge' have become customary in the work of WIPO: first, a general sense (TK *lato sensu*), which embraces the content of knowledge itself as well as traditional cultural expressions (TCEs)/expressions of folklore, and distinctive signs and symbols associated with TK;<sup>2</sup> and, second, a more precise sense (TK *stricto sensu*), which refers to "the content or substance of traditional know-how, skills, practices and learning"; this can be recognized as distinct subject matter, even though this "content or substance may be considered integral with traditional ways of expressing the knowledge and the traditional context in which the knowledge is developed, preserved and transmitted."<sup>3</sup> This second, more precise, sense delineates the scope of knowledge addressed in this paper and is used throughout this text.<sup>4</sup>

Within discussions on the legal protection of TK a distinction has commonly been made between 'positive' and 'defensive' protection of TK. The term 'defensive protection', when applied to TK and genetic resources, refers to measures aimed at preventing the acquisition of IP rights over TK or genetic resources by parties other than the customary custodians of the knowledge or resources. In contrast, the term 'positive legal protection' refers to the use of existing IP or contractual rights or the development of *sui generis* rights to enable the affirmative protection of TK by and for TK holders themselves. This would entail a specific right on

behalf of the TK holders to restrict the way the TK is used by others, or to claim compensation for its use.

In the work of the WIPO, it has frequently been stressed that protection of TK should be undertaken in a comprehensive manner, potentially using both positive and defensive forms of protection. Defensive protection is no substitute for positive protection, and should not be mistaken for the acquisition and active exercise of rights in the protected material. Its impact is limited to preventing other parties from gaining IP rights, and does not in itself prevent others from using this material. Often, the active assertion of rights (positive protection) is necessary to prevent the unauthorized or illegitimate use of TK. In some scenarios, defensive protection may actually undermine the interests of TK holders, particularly when this involves giving the public access to TK, which is otherwise undisclosed, secret or inaccessible. Therefore a careful balance of positive and defensive protection measures and proactive international property (IP) management on the part of TK holders are an important requirement. This will be taken up further in Section IV below.

## **WIPO and traditional knowledge**

### ***Background on the World Intellectual Property Organization***

WIPO is a specialized agency of the United Nations (UN) system of organizations; its mandate is to promote the protection of IP throughout the world through cooperation among States and, where appropriate, in collaboration with other international organizations. The notion of “intellectual property” is defined in the Convention Establishing the WIPO (1967) to include rights relating to:

- literary, artistic and scientific works;
- performances of performing artists, sound recordings, and broadcasts;
- inventions in all fields of human endeavor;
- scientific discoveries;
- industrial designs;
- trademarks, service marks, and commercial names and designations;
- protection against unfair competition; and
- all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields.<sup>5</sup>

WIPO currently has 179 Member States and maintains its headquarters in Geneva, Switzerland. Its main activities include:

- facilitating the conclusion of new international treaties and the modernization of national legislation;
- administration of more than 20 international treaties in the fields of copyright, related rights, patents, industrial designs and trademarks;
- providing technical advice and assistance to developing countries as part of an extensive development cooperation program;
- preparing information and advice to a diverse range of parties; and
- maintenance of services for facilitating the obtaining of protection of inventions, marks and industrial designs for which protection in several countries is desired.

### ***A history of WIPO’s work on TK***

WIPO began its work on TK-related subject matter in 1978, when it initiated discussions on the *sui generis* protection of expressions of folklore in collaboration with the United Nations Educational, Scientific and Cultural Organization (UNESCO). This work resulted in 1982 in the adoption of “Model Provisions for National Laws on the Protection of Expressions of Folklore against Illicit Exploitation and Other Prejudicial Actions”. Following the adoption of the Model Provisions, WIPO’s work did not focus on TK-related subject matter *per se* for more than a number of years.

*Issue identification and needs assessment: 1998–1999*

In 1998, WIPO began a new set of activities designed to explore the IP aspects of the protection of TK. The main objective of these activities was to identify and explore the IP needs and expectations of the holders of TK in order to promote the contribution of the IP system to their social, cultural and economic development.

During this period, new activities were aimed at identifying the issues involved, recognizing that basic conceptual groundwork and systematic data collection were required to assess the IP aspects of the protection of TK, and identifying the scope of future work in a way that reflected the interests of all stakeholders. To this end, a range of activities was carried out by WIPO, including nine fact-finding missions (FFMs) to 28 countries.<sup>6</sup> The FFMs were designed to identify the IP needs and expectations of TK holders for the legal protection of their knowledge and practices. While the IP needs of TK holders had been referred to in other international forums, there had been no systematic global exercise by international organizations to document and assess the IP-related needs of TK holders. Based on the FFMs, WIPO prepared and published a draft FFM report for public comment. All received comments were integrated and a final report was issued in 2001.<sup>7</sup>

WIPO has also undertaken, in cooperation with the United Nations Environment Programme (UNEP), an On-site Documentation Project on the Role of IPR in the Sharing of Benefits Arising from the Use of TK and Associated Biological Resources. This project produced three case studies, which WIPO and UNEP jointly submitted to the Conference of the Parties (COP) of the Convention on Biological Diversity (CBD). The case studies focus on situations in which IPR were used as a tool for benefit sharing in India, Mali and Nigeria. The cases constitute part of a larger study undertaken by WIPO and UNEP on the role of IPR in benefit sharing relating to biological resources and associated TK. The experiences included in these studies may provide lessons on how effective protection of IPR can support implementation of the CBD with respect to the sharing of benefits arising from the use of biological resources and associated TK.

*2000–2001: addressing IP needs of TK holders*

WIPO's exploratory work in 1998 and 1999 showed that TK is a rich source of creativity and innovation. The issues are complex, however, and in order to achieve better understanding and promote wider consensus, the work program for 2000-2001 moved beyond issue-identification and addressed several IP needs identified during 1998 and 1999. These activities included the development of informational materials on TK and IP, particularly in the form of a Distance Learning course on IP and TK<sup>8</sup>, the holding of information workshops on IP and TK<sup>9</sup>, the development of information, training and standards regarding IP and the documentation of TK, and studies of actual examples in which TK protection has been sought under the IP system, and publication of the lessons learned.<sup>10</sup>

These specific programme activities, which responded directly to the needs identified by TK holders in the previous biennium, were supplemented in 2000 by developments which took place in the context of Member State discussions on IP and genetic resources and which led to the creation of a new body within WIPO that is dedicated exclusively to IP issues that arise in relation to genetic resources, TK and folklore. These developments are addressed in the next Section.

### **The WIPO intergovernmental committee on intellectual property and genetic resources, traditional knowledge and folklore**

After discussions among WIPO Member States beginning in September 1999 about intellectual property and genetic resources, the WIPO General Assembly<sup>11</sup> decided that a distinct body should be established within WIPO to facilitate discussions among Member States on issues related to genetic resources, TK and expressions of folklore. The Member States decided to establish this body in the form of an Intergovernmental Committee on Intellectual

Property and Genetic Resources, Traditional Knowledge and Folklore (“the Intergovernmental Committee”).

### ***The mandate of the committee***

The Intergovernmental Committee constitutes a forum for discussions among Member States on intellectual property issues arising in the context of (i) access to genetic resources and benefit sharing; (ii) protection of TK, whether or not associated with those resources; and (iii) protection of expressions of folklore.

In considering the relationship between IP and genetic resources, TK and folklore, the Committee has undertaken information gathering, policy discussion, and practical capacity-building in these three policy areas. This work has highlighted the overlapping nature of this subject matter and pointed to the benefits of an integrated approach to continuing international cooperation on these IP concerns. The Committee’s approach has also illustrated the benefits of interaction and feedback between the parallel processes concerning policy dialogue, pooling information and building capacity. This is shown in a concrete way in some of the key outcomes of the Committee. For example, the Committee has collected and analyzed extensive information about various national approaches to TK protection. This at once creates an informed basis for policy discussions and provides a resource for assessing practical options for national and local initiatives to protect TK.

The Committee’s work has built on the existing basis of consultations, including the WIPO Fact-Finding Missions in 1998-99 and the earlier work of such bodies as the WIPO Meeting on Intellectual Property and Genetic Resources in 2000. An active program of consultation and dialogue has complemented the formal proceedings of the Committee, with emphasis on regional dialogue and enhanced participation of indigenous and local communities in WIPO activities. The Committee has provided a framework for interaction with other international processes concerned with IP aspects of TK and genetic resources, in particular the CBD and FAO.

### ***Outcomes of the committee’s work between 2001 and 2003***

In its first five sessions, the Committee has produced a comprehensive set of outcomes, which are summarized in this section. The first biennium of the Committee’s work has yielded a detailed, integrated set of materials that draw together a wide range of national experience with IP protection of TK, which at once provides a consolidated foundation for international discussions on new or adapted IP protection systems, and provides an informed basis for capacity-building and national policymaking processes.

### ***Activities concerning norms for legal protection of TK***

The Committee developed a series of studies on legal protection of TK, based on some 61 responses to two questionnaires.<sup>12</sup> This included surveys of national experiences with IP protection of TK,<sup>13</sup> analysis of the elements of a *sui generis* TK system,<sup>14</sup> analysis of the definition of TK,<sup>15</sup> and a composite study distilling this material into a single document.<sup>16</sup> These documents included details of national *sui generis* laws for protection of TK, and the range of experiences reported using IP laws (*sui generis* and otherwise) to protect TK. These materials are available both as the basis for continuing international policy discussions on specific TK protection, and to support national policymaking and the assessment of practical options both for the use of existing IP tools and the development of new forms of IP protection.

The Committee gave extensive consideration to the use of databases, registries and other collections and inventories for the protection of TK, and this discussion clarified that databases could be used for the preservation, positive protection and defensive protection of TK. The role of databases for the positive protection of TK was shown in the use of databases with security or access controls which give effect to customary laws and protocols governing the authorized access and distribution of knowledge.<sup>17</sup> A database of patents granted on tradi-

tional medical knowledge illustrated another way of linking positive protection and TK databases.<sup>18</sup>

Extensive analysis was also given to the use of databases and other collections of information in the context of general defensive protection strategies. This focused on approaches to ensure that existing disclosed TK was taken into account in the patent examination process. Based on responses to widely distributed questionnaires, inventories of relevant on-line databases<sup>19</sup> and periodicals<sup>20</sup> were developed to assist in the creation of tools for more ready access to publicly disclosed TK in searches for relevant prior art. This in turn led to the creation of a TK portal as a pilot version of a potential searching tool for patent examiners.<sup>21</sup> The purpose of this was not to induce the disclosure of TK, but to ensure that any TK already disclosed would be taken into account when potentially relevant patent claims were being assessed. This approach has been taken further in forums beyond the Committee, with steps being taken to enhance the coverage of documented TK in the minimum documentation of the Patent Cooperation Treaty (PCT) system<sup>22</sup> and to expand the International Patent Classification to provide for more accurate and focussed searching for relevant TK during the patent examination process.<sup>23</sup>

A further defensive mechanism that was considered by the Committee concerned the use of disclosure requirements in the patent system to ensure disclosure of TK (and potentially also its origin and the legal circumstances surrounding its access) that is used in the development of a claimed invention.<sup>24</sup> This was studied in conjunction with comparative defensive measures concerning genetic resources used in inventions.

### ***Activities concerning IP aspects of genetic resources associated with TK***

The work of the Committee on IP aspects of genetic resources associated with TK took two general directions. First, it considered licensing practices concerning IP aspects of access to genetic resources; and second, it considered the role of patent disclosure requirements in relation to inventions that are based on access to genetic resources.

Document WIPO/GRTKF/IC/2/3 considered operational principles for intellectual property clauses of contractual agreements concerning access to genetic resources and benefit-sharing. Further study of IP and genetic resources licensing was based on a widely-circulated survey (document WIPO/GRTKF/IC/Q.2) and the development of a database of contractual practices (based on a proposal in document WIPO/GRTKF/IC/3/4). This process had two complementary objectives: First, to create a practical tool so as to provide actual information on contracts concerning access to genetic resources to those with a practical or policy need to consider the range of licensing practices that have been employed; and second, to provide an empirical basis for proposed work towards developing guidelines or principles on the IP aspects of licensing access to genetic resources. At its fifth session the Committee considered some interim insights and results from this work and the sixth session will consider some possible principles developed from the findings to date.

Building on earlier work within WIPO, and responding also to a request from the COP of the CBD,<sup>25</sup> the Committee requested a technical study on disclosure requirements in patent law that were relevant to traditional knowledge or genetic resources used in the course of developing a claimed invention. An initial report (document WIPO/GRTKF/IC/4/11) and a draft study (document WIPO/GRTKF/IC/5/11) were developed for the Committee's consideration; these documents considered the interaction between legal systems governing access to TK and genetic resources on the one hand and established patent law in line with existing international standards, and aim at providing input for policymakers.

### ***Outlook on future work of the intergovernmental committee***

In September 2003 the WIPO General Assembly decided to push forward the work relating to IP and genetic resources, TK and folklore. The Assembly decided on an extended mandate for the WIPO Intergovernmental Committee which requires the Committee to accelerate its work, and to focus in particular on the international dimension of IP and genetic resources, TK



and folklore. The new mandate excludes no outcome for the Committee's work, including the possible development of an international instrument or instruments in this field.<sup>26</sup>

Many comments at the General Assembly highlighted that the Committee's work to that date had already led to a much greater understanding of crucial concepts and IP issues, and that it had clarified how to deal with concerns about inadequate protection of TK. The discussions highlighted the expectation of a number of countries that specific steps should be taken to strengthen protection, including the development of specific new international instruments; others pointed out that the significance of the issues, and their complexity, meant that further analysis and clarification was needed before crystallizing formal outcomes; there is also a view that more work needs to be done to explore the full potential of existing IP rights and systems to protect TK. The Program and Budget approved by the above-mentioned session of the General Assembly included a range of complementary activities, including continuing capacity-building, legislative assistance and cooperation with a range of national, regional and international initiatives. Along with extensive surveys, case studies and analysis of legislation already undertaken by the Committee, these activities will provide a strong basis for the new phase of WIPO's work in this area, and ensure that it is based on a rich understanding of existing approaches and the costs and benefits of different policy options.

### ***Cooperation with other intergovernmental organizations***

Besides the active cooperation between WIPO and UNCTAD - of which this paper is one expression - WIPO has also cooperated with other intergovernmental organizations and UN agencies in the work of the Committee. In the field of TK and genetic resources, the cooperation and coordination have been focused primarily on the CBD and FAO.

Since the first session of the Committee, the Committee members have expressed a strong indication that the Intergovernmental Committee should work closely with the CBD and the FAO, in order to ensure that its work is consistent with and supportive of the work undertaken by these organizations on genetic resources and TK. Following these indications and pursuant to Decisions IV/9<sup>27</sup> and VI/20<sup>28</sup> of the COP of the CBD, the WIPO Secretariat and the Secretariat of the CBD (SCBD) entered into a Memorandum of Understanding (MOU) in order to formalize the already existing cooperation between them. Within the framework of the MOU as well as prior to its signature, an extensive program of cooperation was conducted which included the following activities:

- WIPO and UNEP jointly submitted to the fifth meeting of the COP three case studies on the role of IP rights in the sharing of benefits arising from the use of biological resources and associated TK, as requested by Decision IV/9 of the COP;<sup>29</sup>
- As stipulated in Decision IV/9, the Executive Secretary transmitted to WIPO those Decisions and documents of the fourth COP which relate to IP rights for integration into the relevant subprograms of WIPO's Main Program 11, entitled Global Intellectual Property Issues;<sup>30</sup>
- As requested in Decision V/26 of the COP,<sup>31</sup> WIPO assisted the Executive Secretary of the CBD in the preparation of a "Report on the Role of IP Rights in the Implementation of Access and Benefit-sharing Arrangements"<sup>32</sup> for the first meeting of the Ad Hoc Open-ended Working Group on Access and Benefit-sharing of the CBD, which led to the development and adoption of the draft Bonn Guidelines;
- The Executive Secretary of the CBD transmitted to the Committee the Report of the CBD Working Group on Access to Genetic Resources and Benefit-sharing<sup>33</sup> as well as certain Decisions of the sixth COP to the CBD, which contained, respectively, the draft and final texts of the Bonn Guidelines on Access to Genetic Resources and the Fair and Equitable Sharing of the Benefits Arising from Their Utilization ("the Bonn Guidelines");<sup>34</sup>
- The CBD Ad Hoc Open-ended Intersessional Working Group on Article 8(j) and Related Provisions contributed to the compilation of the WIPO Inventory of TK-related Periodicals and the Inventory of TK-related Databases;<sup>35</sup>
- In 2002 WIPO and UNEP submitted a draft Study to the sixth COP on the role of IP rights in the sharing of benefits arising from the use of biological resources;



- WIPO is contributing to the 'Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities' currently under preparation by the SCBD, as requested in Decision VI/10;<sup>36</sup>
- the CBD Open-ended Inter-Sessional Meeting on the Multi-Year Programme of Work of the Conference of the Parties up to 2010 (MYPOW) has recommended that WIPO be invited by the Executive Secretary to further explore and analyse the role of IP rights in technology transfer in the context of the CBD;<sup>37</sup> and
- as requested in Decision VI/24C<sup>38</sup> and in accordance with a decision of the WIPO General Assembly, WIPO prepared and transmitted to the CBD a Technical Study on Disclosure Requirements Concerning Genetic Resources and Traditional Knowledge.<sup>39</sup> This Technical Study will be considered at the seventh meeting of the COP of the CBD.

Further collaboration between the Secretariats of the CBD and WIPO within the framework of the MOU may include the linking of the CBD Clearing-house Mechanism<sup>40</sup> with certain components of the WIPO Intellectual Property Digital Libraries (IPDL),<sup>41</sup> pursuant to the recommendations issued by the CBD-MYPOW on technology transfer.<sup>42</sup>

The basic terms of reference for the Intergovernmental Committee, as adopted by the General Assembly, foresee that the Committee may address IP issues which arise in the context of multilateral systems for access to genetic resources and benefit-sharing.<sup>43</sup> In this context, WIPO has collaborated extensively with FAO during the negotiations for the FAO International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR), which establishes a Multilateral System of Access and Benefit-sharing.<sup>44</sup> At its first session, the Intergovernmental Committee reached general agreement on undertaking a possible task on IP issues relating to this Multilateral System,<sup>45</sup> taking into account the conclusions of the FAO negotiations.<sup>46</sup> Pursuant to the mandate and decisions of the Intergovernmental Committee, WIPO has collaborated extensively with FAO, including on the following activities:

- WIPO provided technical-level information on IP matters during the negotiations for the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR or "International Treaty") for resolving certain IP issues which had arisen in the context of the negotiations;<sup>47</sup>
- WIPO contributed information on IP and genetic resources for food and agriculture to the Committee on Agriculture of the FAO, the Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture, and the Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture;<sup>48</sup>
- The FAO regularly informed the Committee of the progress of negotiations on plant genetic resources and formally transmitted the ITPGR to the Committee as an information document, once the Treaty had been adopted;<sup>49</sup>
- WIPO has contributed to the first meeting of the Interim Committee for the International Treaty and has been invited by the Interim Committee to send one representative to an Expert Group on the Terms of the Standard Material Transfer Agreement to provide technical assistance at the request of the Expert Group;<sup>50</sup> and
- The FAO Commission on Genetic Resources for Food and Agriculture has requested that WIPO be invited to cooperate with the FAO in preparing a study on how IP rights may affect the availability and use of material from the International Treaty and the International Network of *Ex-situ* Collections under the Auspices of the FAO.<sup>51</sup>

WIPO has also participated in thematic meetings organized by the FAO which address specific IP issues, such as an Expert workshop on public agricultural research and the impact of IP rights on biotechnology in developing countries, and has undertaken to contribute information on global patenting trends in respect of plant genetic resources for food and agriculture, covered by the ITPGR, to the FAO.<sup>52</sup>

In the context of its work on TCEs and expressions of folklore, the WIPO has also cooperated and coordinated its work with the United Nations Educational, Scientific and Cultural Organization (UNESCO). Detailed information regarding outcomes and current status of this coordination and cooperation are available on the WIPO website.<sup>53</sup>

Based on past cooperation with UNCTAD and on WIPO's experiences in its own program of cooperation for economic development, the final section of this paper will set out some

reflections on the role of IP in harnessing TK for development, which may be of relevance in the context of UNCTAD's work on trade and development.

## **Intellectual property and the harnessing of traditional knowledge for trade and development: the role of WIPO and other specialized United Nations agencies**

For more than half a century, development policies have been dominated by the idea that the role of national governments and intergovernmental organizations is to provide what poor people lack – for example, funding, training, or employment. Development strategies have not been built on resources in which poor people often are rich, such as their own knowledge, innovations and creativity. Harnessing TK might facilitate a bottom-up approach to trade and development, which reverses the understanding of agencies involved in the development process.

Lessons learned from WIPO's work on intellectual property and TK suggest that in order to harness TK for trade and development in this manner, the legal protection of TK by IP rights is a necessary requirement, but by no means the only one. Apart from IP issues, the utilization of TK for trade and development requires additional elements that merit attention from intergovernmental organizations. The following paragraphs set out some elements that WIPO is not able to cover but that need attention.

To harness TK for trade and development, it is necessary to combine the legal protection of TK with investment and entrepreneurship. As indicated by UNCTAD, this can be achieved through "comprehensive strategies to harness TK for development and trade, reflecting the national development objectives and interests of indigenous and local communities".<sup>54</sup> In addition to legal protection, such comprehensive strategies might include, *inter alia*, the following three steps:

- (i) documenting and disseminating TK:
  - linking innovators from the private, public, and formal and informal sectors;
  - disseminating TK to link TK holders with investors and entrepreneurs; and
  - promoting lateral learning among TK holders;
- (ii) converting TK into products and services:
  - facilitating access to venture capital;
  - facilitating access to microcredit;
  - scaling up of innovations; and
  - establishing R&D partnerships between formal and informal innovators;
- (iii) commercializing TK-based products and services:
  - Assisting in market research;
  - Helping in market development and generation of consumer demand for TK-based products; and
  - Formulating trade policy incentives for TK-based products.

Comprehensive strategies for TK in trade and development should encompass these three elements, which are distinct from the development of new standards concerning the availability of IP rights for TK. The establishment of comprehensive strategies for the harnessing of TK in trade and development may require legal protection of TK *inter alia*, but it is not conditional on the establishment of IP protection for TK. Rather, it requires the provision of accurate IP information for the effective use of IP rights in such strategies. Based on its experience with the protection of TK, WIPO would be willing and able to provide accurate IP information as a contribution to the development of such comprehensive strategies.

## **Conclusion**

The importance of traditional knowledge and associated genetic resources for an integrated development policy is increasingly recognized by development actors at the local, national and international levels. Intellectual property protection of TK and associated resources takes on a particular significance in this context. WIPO recognizes that IP rights are a necessary requirement, but not the only requirement, for harnessing TK for trade and development. As the

specialized UN agency responsible for IP, WIPO hopes that its work on IP protection will contribute to the harnessing of TK for a sustainable and bottom-up approach to trade and development. Since 1998, WIPO's work has aimed at producing and providing accurate technical IP information to the relevant stakeholders and international organizations, particularly regarding the relevance of IP for TK and genetic resource policy.

## Notes

- <sup>1</sup> See, Subprogram 7.01 of the WIPO Program and Budget for the 2004-2005 biennium.
- <sup>2</sup> One definition of TK *lato sensu* is 'the ideas and expressions thereof developed by traditional communities and Indigenous peoples, in a traditional and informal way, as a response to the needs imposed by their physical and cultural environments and that serve as means for their cultural identification.'
- <sup>3</sup> See WIPO/GRTKF/IC/5/12 , paragraph 44.
- <sup>4</sup> Protection of TCEs/expressions of folklore is covered in a range of WIPO publications and documents. A wide selection of these publications and documents may be found at the TCE webpages of the WIPO website: <http://www.wipo.int/tk>.
- <sup>5</sup> Article 2 (viii), Convention Establishing the World Intellectual Property Organization (WIPO).
- <sup>6</sup> The nine original FFM covered the regions of the South Pacific, Southern and Eastern Africa, South Asia, North America, Central America, West Africa, the Arab countries, South America and the Caribbean. Subsequently, FFM were undertaken to other regions, such as China, on specific aspects of TK protection.
- <sup>7</sup> See, WIPO. *Report on Fact-finding Missions on Intellectual Property and Traditional Knowledge (1998-1999)*. (WIPO publication no. 768) Geneva: WIPO, 2001.
- <sup>8</sup> They form the basis of an IP/TK distance learning course to be offered by WIPO. The Distance Learning Program of the WIPO Worldwide Academy takes full advantage of information technology and the Internet, offering new teaching methods, specially designed course materials, evaluation tools, tailored means of delivery, and expanded audiences. Teaching takes place in the virtual environment of the Academy's website. See <http://www.wipo.int/academy/en/overview.htm>.
- <sup>9</sup> These Workshops have been held, inter alia, for countries of the South Pacific, the Asian region, North America and the Association of South Asian Regional Cooperation. Furthermore, TK protection is now almost invariably included in the programs for the many training activities organized by WIPO's Cooperation for Development Sector.
- <sup>10</sup> Examples of case studies resulting from such work are available on the WIPO website at <http://www.wipo.int/tk>.
- <sup>11</sup> See the records of the 26<sup>th</sup> Session held in Geneva, Switzerland, from September 26 to October 3, 2000.
- <sup>12</sup> See document WIPO/GRTKF/IC/2/7 and WIPO/GRTKF/IC/Q.1
- <sup>13</sup> See documents WIPO/GRTKF/IC/2/9, WIPO/GRTKF/IC/3/7, WIPO/GRTKF/IC/4/7 and WIPO/GRTKF/IC/5/7
- <sup>14</sup> See documents WIPO/GRTKF/IC/3/8 and WIPO/GRTKF/IC/4/8
- <sup>15</sup> See document WIPO/GRTKF/IC/3/9
- <sup>16</sup> See document WIPO/GRTKF/IC/5/8
- <sup>17</sup> See document WIPO/GRTKF/IC/3/17, para. 158.
- <sup>18</sup> See document WIPO/GRTKF/IC/3/17, para 160.
- <sup>19</sup> See document WIPO/GRTKF/IC/3/6.
- <sup>20</sup> See document WIPO/GRTKF/IC/3/5.
- <sup>21</sup> The TK Portal of Online Databases: <http://www.wipo.int/tk/en/databases/tkportal/index.html>
- <sup>22</sup> See documents PCT/CTC/20/5; PCT/MIA/7/3 and PCT/MIA/7/5.
- <sup>23</sup> See document IPC/CE/32/12.
- <sup>24</sup> See documents WIPO/GRTKF/IC/4/11, WIPO/GRTKF/IC/5/10 and WIPO/GRTKF/IC/5/9.
- <sup>25</sup> See document WIPO/GRTKF/IC/4/11 for details of earlier WIPO work and the CBD request.
- <sup>26</sup> The working documents for the sixth session (15 - 19 March 2004) of the Intergovernmental Committee are available on the WIPO website at: <http://www.wipo.int/tk>
- <sup>27</sup> See Decision IV/9 of the COP to the CBD, paragraph 17.
- <sup>28</sup> See Decision IV/20 of the COP to the CBD, paragraph 36.
- <sup>29</sup> See Decision IV/9 of the COP to the CBD, paragraphs 10(b) and 10(e).
- <sup>30</sup> See Decision IV/9 of the COP to the CBD, paragraphs 14 and 16.
- <sup>31</sup> See Decision VI/26 of the COP to the CBD, paragraph 15(c).
- <sup>32</sup> See document UNEP/CBD/WG-ABS/1/4.
- <sup>33</sup> See document WIPO/GRTKF/IC/2/11.

- <sup>34</sup> See document WIPO/GRTKF/IC/3/12.
- <sup>35</sup> See documents WIPO/GRTKF/IC/3/5 and WIPO/GRTKF/IC/3/6.
- <sup>36</sup> See Decision VI/10 of the COP to the CBD, Annex I, paragraphs 15, 23 and 24(d).
- <sup>37</sup> See document UNEP/CBD/COP/7/5, Annex, Section 4, paragraph 2(e).
- <sup>38</sup> See Decision VI/24 of the COP to the CBD, Section C, paragraph 4.
- <sup>39</sup> See documents WIPO/GRTKF/IC/4/11 and WIPO/GRTKF/IC/5/10 and WIPO/GRTKF/IC/6/9.
- <sup>40</sup> See <http://www.biodiv.org/chm/default.aspx>
- <sup>41</sup> See <http://ipdl.wipo.int/>
- <sup>42</sup> See document UNEP/CBD/COP/7/5, Annex, Section 4, paragraph 2(b).
- <sup>43</sup> See document WIPO/GA/26/6, paragraph 21 (iii).
- <sup>44</sup> See Part IV of the International Treaty on Plant Genetic Resources for Food and Agriculture, as adopted by the FAO Conference through Resolution 3/2001 in November 2001.
- <sup>45</sup> See document WIPO/GRTKF/IC/1/3, paragraphs 48 to 54 (Task A.3).
- <sup>46</sup> See summary of the Chair at paragraph 128 in document WIPO/GRTKF/IC/1/13.
- <sup>47</sup> See Verbatim of the Thirty-first Session of the FAO Conference, Rome, November 2 to 13, 2001.
- <sup>48</sup> See documents CGRFA/WG-PGR-1/01/REPORT and CGRFA-9/02/3.
- <sup>49</sup> See document WIPO/GRTKF/IC/2/INF/2.
- <sup>50</sup> See document CGRFA/MIC-1/02/REP, Appendix D, paragraph 8.
- <sup>51</sup> See document CGRFA-9/02/REP, paragraph 31.
- <sup>52</sup> See "Report of the FAO/TorVergata Expert Workshop on Public Agricultural Research: The Impact of IPRs on Biotechnology in Developing Countries." Rome, June 24–27, 2002.
- <sup>53</sup> See the page on TCEs and expressions of folklore at <http://www.wipo.int/tk>. In keeping with the limited scope of this paper, the inter-agency cooperation regarding TCEs and expressions of folklore are not covered in detail here.
- <sup>54</sup> See document TD/B/COM.1/EM.13/2.

# TRADITIONAL KNOWLEDGE: RESISTING AND ADAPTING TO GLOBALIZATION

Douglas Nakashima

## Introduction

Science is but one system of knowledge among many. Other knowledge systems, embedded in a wide array of cultures and sustaining a broad spectrum of ways of life, constitute a rich and diverse intellectual heritage that is attracting increasing attention worldwide. Often referred to as traditional ecological knowledge, traditional knowledge (TK) or local or indigenous knowledge, these “other systems” are the sophisticated sets of information, understandings and interpretations that guide human societies around the globe in their innumerable interactions with the natural milieu: agriculture and animal husbandry; hunting, fishing and gathering; struggles against disease and injury; naming and explanation of natural phenomena; and strategies for coping with fluctuating environments. This fine-grained interplay between societies and environments provides local and indigenous knowledge systems with their diverse structures and content; their complexity, versatility and pragmatism; and their distinct internal logic anchored in specific world views.

From the viewpoint of science and technology, these other systems of knowledge hold considerable promise. For the pharmaceutical industry, traditional health practitioners facilitate the search for new bioactive ingredients by providing privileged information about their selective use of biodiversity. Similarly, the numerous crop varieties developed and sustained by generations of small-scale farmers offer a genetic pool of considerable interest to biotechnologists, including those of the agro-chemical industry. In the environmental domain, resource users have constructed sophisticated understandings of local ecosystem function, and their direct involvement in the management process is now seen as the sine qua non of successful biodiversity conservation.

So, after decades of grudging acknowledgement, TK has now become, at least in certain circles, fashionable. The resulting bandwagon effect has led to an increasingly common abuse of terms. In the development and resource management milieu, one now finds the terms traditional knowledge and indigenous knowledge loosely applied to a wide array of activities many of which do not give any serious consideration to the knowledge possessed by local community members. Nevertheless, by applying the buzzword of the moment, these actions benefit from the aura currently surrounding the concept of TK.

## Interactions between science and TK: A brief history

But it is no simple matter to shift from the mere use (or abuse) of the term to the actual articulation of scientific and traditional knowledge. To appreciate some of the major hurdles ahead, we can benefit from a brief look to the past, for the dialogue between western scientists and indigenous knowledge holders has an extensive history.

In the colonial period, when Europe was “discovering” the world, the disciplines of ethnobotany and ethnozoology were established to grapple with the sudden influx of biological information from “exotic” corners of the world. These disciplines grew by leaps and bounds, bolstered by substantial inputs of TK. Their primary mission, however, was not to understand these other knowledge systems per se, but rather to glean from them useful information for the further development of colonial science. Efforts focused on compiling lists of novel plants and animals that were “useful” to local populations and, consequently, were thought to be of potential utility back home.

But colonial scientists did not limit their reliance on local experts to the simple identification of species of interest. They actually adopted from their indigenous counterparts entire classification schemes that order and interpret these ecological systems according to an indigenous



logic. In this manner, western taxonomic knowledge and practice were significantly transformed by their encounter with traditional systems of knowledge and meaning. European understandings of Asian botany, for example, “ironically, depended upon a set of diagnostic and classificatory practices which, though represented as Western science, had been derived from earlier codifications of indigenous knowledge” (Ellen and Harris 1999: 182). Throughout the colonial period, western scientific understandings expanded through the appropriation of traditional ecological knowledge, with little acknowledgment of the intellectual origins of their borrowed discoveries.

Has the situation changed today? Certainly the colonial attitude lives on in the surreptitious appropriation of TK for commercial ends. At the same time, efforts are being made to move towards new relationships between science and TK, based on partnership, exchange and mutual benefit. While the goals may be laudable, they remain difficult to achieve, and the way forward, even when travelled with the best of intentions, is fraught with pitfalls.

## **Intellectual property and TK**

The need for appropriate systems of protection for TK is now widely recognized. Existing arrangements for protecting intellectual property rights (IPR) seemed in the first instance to offer a logical solution. Patent and copyright laws, however, have evolved within very particular socio-economic and political contexts. They are designed to protect individuals whose specific “inventions” require safeguarding in view of their perceived market value. Can such arrangements accommodate TK, which is collectively owned, whose “invention” extends across several generations and whose intent is to provide ecological understanding and social meaning, and not commercial profitability (Prott in press)?

Given these inherent incompatibilities, the application of conventional IPR may have impacts quite other than those intended. By protecting select elements in isolation from the larger cultural context, IPR encourage fragmentation and atomization of the cultural system. By designating knowledge “owners”, they may trigger social dissension between those recognized as proprietors and other community members that are excluded. And finally, as conventional IPR serve to protect knowledge by setting the rules for its commercial exploitation, they in fact deliver up local knowledge to the global marketplace (Barsh 1999).

In short, existing IPR arrangements are culturally inappropriate for protecting TK systems. Today efforts are turning towards the considerably more challenging task of defining completely new or *sui generis* systems for protection. Much difficult groundwork is required before we can begin to speculate as to what such systems might encompass, how they might operate and whether or not they might provide culturally appropriate solutions.

## **The challenge of articulating science and TK**

Just as existing IPR systems jeopardize rather than facilitate TK preservation, the integration of this knowledge into scientific frameworks may pose similar problems. Unlike for IPRs, however, the potential negative impacts of science on TK systems are as yet little appreciated.

From the scientific viewpoint, TK is first and foremost a resource. During past decades, many scientists have expressed their appreciation of the wealth of useful information embedded in TK and have recognized the utility of integrating the two (scientific and traditional) systems of knowledge. Integration of TK with science, however, requires the extraction of relevant knowledge through a process of scientific validation in order to separate the “useful” from the “useless”, the objective from the subjective, indigenous science from indigenous belief. One cannot help but see the parallels between this contemporary mining of traditional knowledge for information useful to science and similar activities during the colonial period.

While this process may be profitable to science, for TK systems the result is once more dismemberment and fragmentation. Even scientists with the best of intentions may end up accelerating the demise of these other systems of knowledge by valorizing those components that most resemble scientific information and implicitly casting aspersions on other elements



that scientists consider to be of the realm of superstition and belief. The result is the accelerated replacement of the traditional systems with the scientific system.

### **Towards a more equitable relationship**

Whereas this article began with the topic of science, discussion of TK have lead to conclusion with culture. For the challenges as yet to be resolved, whether they relate to standardization for the protection of TK or to equitable means of articulating TK and science, are fundamentally cultural.

For scientists, culture tends to be viewed as a foreign quantity whose consideration falls outside the bounds of their profession. Certainly they would agree to linking the cultural factor with the indigenous component of the equation. For the purposes of this discussion, however, it is the culture of science that is of particular relevance (Nakashima and Roué in press). To briefly illustrate this point, consider two fundamental cultural constructions that have provided science with its very foundations, and which today remain an everyday reality of scientific thought and practice. These include (i) the conceptual separation/opposition of nature (environment) and culture (society) and (ii) the differentiation of rationality and spirituality, the empirical (science) and the symbolic (religion). These tenets are such an integral part of the scientific world view (epistemology) that scientists are not aware of them as specific cultural interpretations of the world. For them, they simply represent reality. Scientific reality, however, differs distinctly from that lived by TK holders, who conceive of the world as a place with pathways between the natural and societal realms and one where spirituality infuses everyday objects and everyday acts.

In other words, there is no objective basis for considering science a superior reference point for reality than any number of other world views, indigenous or otherwise. We can, of course, arbitrarily choose. Given science's institutional power in mainstream society, it is not surprising that the "objective and rational" scientific method is repeatedly called upon to judge other knowledge systems (Agrawal 1999). But it is important to recognize that this is a societal choice, not one defensible from any neutral or acultural perspective. Consequently, the encounter between scientific and traditional knowledge must be apprehended as a meeting of cultures, with the cultural component as prominent in one camp as in the other.

Full appreciation of this perspective, changes our approach in articulating scientific and TK systems (a more appropriate term than 'integration'). Greater emphasis must be placed on levelling the playing field and appreciating TK not as sets of information, but as integral components of dynamic societies and cultures. Conservation of TK, therefore, must pass through the pathways of conserving language (as language is an essential tool for culturally-appropriate encoding of knowledge); ensuring knowledge transmission; strengthening the control of traditional societies over the processes of change that affect them; and conservation and continued access to the environments upon which their way-of-life depends.

### **Conclusion: A new impetus for UNESCO action on local and indigenous knowledge**

Traditional knowledge and management are not new themes for UNESCO. Early initiatives in the 1970s and 80s addressed traditional agro-piscicultural systems in Mexico through the Man and the Biosphere programme( MAB), and traditional marine resource management in the Pacific Basin through the Coastal Marine Programme (Ruddle and Johannes 1985). At the 1992 United Nations Conference on Environment and Development, clear reference was made to TK in the Rio Declaration and Agenda 21. As well, the 'knowledge, innovations and practices of indigenous and local communities' are the focus of Article 8 (j) of the Convention on Biodiversity(CBD), and this article continues to provide an important impetus for international action.

Recently, TK has re-emerged as a priority concern for several of UNESCO's sectors (Nakashima et al. 2000). The issue received strong support at the World Conference on Science, held in Budapest in June/July 1999, where a special thematic session was organised on "Science and Other Systems of Knowledge" (Nakashima 2000). A number of important

recommendations concerning traditional knowledge systems were approved by the over 150 countries participating in this world event co-organized by UNESCO and the International Council for Science (ICSU). Several UNESCO Member States also brought TK to the fore at the Organization's last General Conference (October 1999, Paris). There, the Natural Sciences and the Social & Human Sciences Commission decided that an intersectoral project on TK should be proposed for inclusion in the next medium term strategy (2002-07).

In the Sector for Culture, strong interest in TK has been voiced through the priority given to 'intangible cultural heritage', and in particular, the calls to establish an international normative instrument in this domain. In addition, the issues of 'cultural rights' and of indigenous peoples, in particular in the context of the on-going Decade for Indigenous Peoples, are also of great significance for UNESCO and have a clear relationship to the traditional knowledge area.

Given these converging priorities relating to TK, UNESCO's sectors for Natural Sciences, Social & Human Sciences, Culture, Education and Communications are collaborating in a project on "Local and Indigenous Knowledge Systems (LINKS) in a Globalized World" that is to be undertaken in 2002-03. The LINKS project will contribute to: (i) building equitable partnerships for biodiversity conservation between scientists and indigenous knowledge holders; (ii) maintaining the vitality of TK within indigenous communities and reinforcing its transmission between generations; and (iii) contributing to the development of innovative mechanisms for protecting local knowledge from improper appropriation.

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# PLANT VARIETY PROTECTION AND THE PROTECTION OF TRADITIONAL KNOWLEDGE

Barry Greengrass

## Introduction

Plant variety protection (PVP), also referred to as plant breeder's rights (PBR), is an exclusive right granted to the breeder of a new plant variety to exploit it. It is a form of intellectual property right (IPR) and is an independent sui generis form of protection tailored to the protection of new plant varieties.

Why should new plant varieties be protected? Breeding new varieties of plants requires a substantial investment in terms of skill, labour, material resources and money, and it may take many years (10 to 15 years in the case of many plant species). Once developed and released into the market, the variety can readily be reproduced, in which case its breeder is deprived of the opportunity to profit adequately from his or her investment. Granting to breeders of new varieties the exclusive right to exploit their varieties both encourages breeders to invest in plant breeding and contributes to the development of agriculture, horticulture and forestry.

## The International Union for the Protection of New Varieties of Plants

The International Union for the Protection of New Varieties of Plants (UPOV)<sup>1</sup> is an intergovernmental organization with headquarters in Geneva, Switzerland. UPOV was established by the International Convention for the Protection of New Varieties of Plants (the UPOV Convention), which was signed in Paris in 1961 (the 1961 Act). The Convention entered into force in 1968 and was revised in Geneva in 1972, 1978 and 1991. The 1978 Act entered into force on November 8, 1981, and the 1991 Act entered into force on April 24, 1998.

The parties to the Convention ("the member States") undertake to grant PBR with respect to new plant varieties in accordance with the principles established in the Convention and thus on an internationally harmonized basis.

**UPOV member States:** As of 30 June 2004, UPOV had 55 member States, which are listed in Box 1. Membership has been expanding worldwide, and many new members are developing countries. A further 21 countries and two regional organizations have initiated with the Council of UPOV the procedure for becoming members of the Union.<sup>2</sup> Many non-member States currently have laws or proposals for laws to protect plant varieties. Information available to UPOV suggests that the number of States likely to have laws based on the UPOV Convention in the near term is at least 110.

### Box 1: UPOV Member States

Argentina, Australia, Austria, Belarus, Belgium, Bolivia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Croatia, Czech Republic, Denmark, Ecuador, Estonia, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Kenya, Kyrgyzstan, Latvia, Lithuania, Mexico, Netherlands, New Zealand, Nicaragua, Norway, Panama, Paraguay, Poland, Portugal, Republic of Korea, Republic of Moldova, Romania, Russian Federation, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Trinidad and Tobago, Tunisia, Ukraine, United Kingdom, United States of America, Uruguay.  
(55 countries as of 30 June 2004)

**The UPOV Convention:** The latest amendment in 1991 reflected some 30 years of experience with the operation of the Convention, as well as scientific and technical developments (e.g. the advent of biotechnology) during that period.

### Box 2: Main Features of the UPOV Convention

- Standard rules for granting of protection
  - Novelty
  - Distinctness
  - Uniformity
  - Stability
  - Appropriate denomination
- Minimum duration of protection
  - 20 years (trees/vines: 25 years)
- Minimum number of plant genera and species whose varieties must be protected
- Rules for national treatment and priority that regulate relations between member States
- Minimum scope of protection

The UPOV Convention has five main features (see Box 2).

In seeking protection under the UPOV Convention special attention should be paid to the three technical criteria specified in the Convention: (i) distinctness, (ii) uniformity, and (iii) stability. These criteria must be satisfied if a variety is to be identifiable. In addition, there are two non-technical criteria: (i) the variety must be “new” in the sense that it must not have been sold or offered for sale prior to certain specified dates, and (ii) it must be given an acceptable denomination. The Convention forbids the addition of any other condition for granting protection.

The TRIPS Agreement and the UPOV system: Article 27.3(b) of the TRIPS Agreement provides that “Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system, or by any combination thereof. ....” The UPOV system for the protection of new plant varieties can be considered as the best-known example of a sui generis system meeting all requirements for an effective PVP system.

### Traditional knowledge (TK) and the UPOV Convention

**TK and the UPOV Convention:** The UPOV Convention is an international convention dealing exclusively with the protection of new plant varieties and is silent on the subject of TK and genetic resources. However, it should be noted that the Convention does not forbid the granting or creation of rights in respect of TK, or categories of plant material that are not plant varieties protected under the Convention. UPOV member States are free to establish special systems for protecting TK as long as these do not conflict with the UPOV Convention.

**Protection of TK by plant variety protection systems:** The subject matter of PVP is the plant variety itself. The plant variety must exist physically in order to be protected. Knowledge frequently does not exist physically and is, therefore, not suitable for being given protection under the UPOV system. All new varieties meeting the criteria of distinctness, sufficient uniformity, stability and novelty are protectable. New varieties developed by indigenous communities or farmers using TK, which have a fixed identity when reproduced, may, in many cases, meet the UPOV criteria, in which case they can be protected under the Convention.

The process of applying for PVP is relatively simple and is normally completed by applicants themselves without the help of legal specialists. As a result, the transaction costs incurred in applying and registering for PVP are reasonably low, which facilitates applications from small plant breeders, individual farmers and local communities. The UPOV system could, therefore, be used as a tool for promoting plant variety innovations by indigenous and local communities and could thus contribute to the commercialization of their TK.

## Special features of the UPOV Convention relevant to the protection of the interests of farmers and local communities

As was mentioned earlier, the UPOV Convention is silent on the subject of TK and genetic resources as such. However, this does not mean that it is insensitive to concerns arising from the application of the principles of the Convention on Biodiversity or the International Undertaking on Plant Genetic Resources (IU). PVP under the UPOV Convention has several special features relevant to the protection of the interests of farmers and local communities.

**Distinctness:** A variety should be distinct in order to be protected. Article 7 of the 1991 Act of the UPOV Convention provides that:

“The variety shall be deemed to be distinct if it is clearly distinguishable from any other variety whose existence is a matter of common knowledge at the time of the filing of the application...”

“Variety” is defined in Article 1 (vi) of the 1991 Act in such a way that plant groupings that do not satisfy the requirements for protection (e.g. some landraces) may still be commonly considered varieties for the purpose of distinguishing them.<sup>3</sup> This means that new varieties that are candidates for protection should be distinct from all other known varieties, including those landraces and traditional varieties, as well as commercialized or protected varieties, which meet the definition of Article 1 (vi) and have a reasonably fixed identity when reproduced. The UPOV system is designed to ensure that breeders cannot seek legal protection for existing landraces or local varieties as such or for varieties that are not clearly distinguishable from such landraces or local varieties.

**Sufficient uniformity and stability:** In order for plant variety protection to be granted and enforced, the physical identity of the variety must be fixed in such a way that material of the variety can be identified as such – for example, in the field or in a seed cleaning plant. If necessary, as a last resort, it must be possible to convince a judge in a court of law that particular plant material is material of a particular protected plant variety.

The UPOV Convention analyzes the question of varietal identity into the components of distinctness, sufficient uniformity and stability (Articles 7 to 9 of the 1991 Act). A variety must be distinct from other known varieties in order to be protected. Establishing the distinctness of a variety requires that it be sufficiently uniform in its relevant characteristics to enable a description to be prepared that will distinguish the variety from other varieties of the same species. It seems obvious that once this description is established, the variety must, when reproduced, continue to exhibit these characteristics – that is to say, it must be stable. If its physical characteristics change whenever it is reproduced, it will have no fixed identity to which a legal right can be attached. Uniformity and stability are not, as such, objectives of the UPOV Convention; they are criteria essential for identifying the subject matter of protection and enabling its effective enforcement.

Alternative criteria to distinctness, relative uniformity and stability, such as “identifiability”, for the protection of plant varieties have been proposed, especially for categories of plant material other than new varieties protected under the UPOV system. However, such suggestions fail to consider in any detail how varieties are to be distinguished from each other in practice. Consideration should be given to whether such alternative approaches can, in practice, fix the identity of the protected material and enable its effective protection.

**Prior informed consent and plant variety protection:** It has been proposed that the possession of prior informed consent (PIC) be required to be indicated on the applications for certain new varieties. However, such a requirement cannot fulfill the objective of preventing the sale of varieties developed without PIC, since such varieties could still be marketed without the benefit of protection. It should be noted, however, that the UPOV Convention does not forbid making PIC a regulatory requirement for the marketing of plant material.

**Breeder’s exemption:** The “breeder’s exemption” is one of the most important provisions of the UPOV system. In order to ensure the continuity and further development of plant improvements, under the UPOV Convention, a protected plant variety must be available without restriction for use by others<sup>4</sup> as starting material for the development of new varieties. The



**Box 3-1: Exceptions to the Breeder's Rights (Article 15 of the 1991 Act)**

- (1) [Compulsory exceptions] The breeder's right shall not extend to:
- (i) Acts done privately and for non-commercial purpose,
  - (ii) Acts done for experimental purposes, and
  - (iii) Acts done for the purpose of breeding other varieties, except where the provisions of Article 14 (5) apply, or Article 14(1) to (4) apply in respect of such other varieties. ("Breeder's exemption")

breeder of the resulting new variety must also be free, with one narrow exception,<sup>5</sup> to market the new variety without payment to the breeder of the protected variety used as a germplasm source. The reasoning is that, if the breeder of a variety uses the variety of another breeder as a germplasm source, his own variety should in turn be freely available. Without this concept, overall progress in plant breeding and, therefore, benefits for society will be greatly inhibited. It can be suggested that this issue needs to be carefully considered in designing any system for protecting traditional varieties or knowledge.

Others often contrast the UPOV system with the patent system, in which protected plant material may not be available for use as a germplasm source. The UPOV system takes into account the nature of plant breeding and endeavours to balance the interests of breeders/contributors to the improvement of genetic material through different generations.

This principle of free access to protected varieties can be considered as a form of sharing the benefits derived from the utilization of genetic material that is already available. This has been well recognized in discussions on the revision of the IU.

**Box 3-2: Exceptions to the Breeder's Rights (Article 15 of the 1991 Act)**

- (2) [Optional exception] Notwithstanding Article 14, each Contracting Party may, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, restrict the breeder's right in relation to any variety in order to permit farmers to use for propagating purposes, on their own holdings, the product of the harvest which they have obtained by planting on their own holdings the protected variety or a variety covered by Article 14(5) (a) (i) or (ii)

**Farmer's privilege:** Another special provision of the UPOV Convention reflects the UPOV's awareness of the desire of farmers to save part of their harvest of some crops in order to plant a crop for the next season ("farm-saved seed"). The 1991 Act of the UPOV Convention allows member States to, depending on national circumstances, exclude from the breeder's right the saving of part of the harvest of a holding for reuse as seed on the same holding. In this respect, member States are free to establish appropriate provisions to balance the interests of farmers and breeders in light of common practices in the country and national circumstances.

**Exception for private and non-commercial Acts:** The 1991 Act of the UPOV Convention contains a provision, in Article 15(1), that has no equivalent in the 1978 Act. It requires States acceding to the 1991 acts to shelter from the effect of the protection right all acts carried out for private and non-commercial purposes. As a result of this provision, all acts with a protected variety of indigenous and local communities for subsistence purposes clearly fall outside the breeder's right. Equally, this provision would seem to make it possible for States, if they so wish, to exclude informal non-commercial seed exchanges between farmers from the effects of the breeder's right.



## Importance of establishing an effective plant variety protection system for the development of agriculture

Projected increases in the world population call for future increases in world food supplies that should substantially exceed the increases achieved in the past. The continuous development of improved plant varieties is of high priority in striving to meet this demand. The establishment of an effective plant variety protection system is indispensable to promote breeding activities by giving private breeders enough incentive to invest money and time for breeding, particularly at a time when substantial increases in public investment in breeding are unlikely.

The experience of UPOV member States has shown that plant variety protection increases the number of breeders and varieties, and consequently widens the range of improved varieties available to farmers, with a potential increase in genetic variability. Over 100,000 new varieties have been protected under the UPOV system since it was first introduced. At present, over 50,000 varieties are protected. Some 5,000 new varieties are granted protection in UPOV member States each year.

Farmers clearly benefit from the supply of new, improved varieties resulting from the establishment of a plant variety protection system. While the need to increase respect for traditional knowledge is recognized, this objective should be addressed without jeopardizing the effectiveness of plant variety protection systems and impeding the progress of breeding.

### Notes

- <sup>1</sup> The acronym UPOV is derived from the French name of the organization, Union internationale pour la protection des obtentions végétales.
- <sup>2</sup> As of 30 June 2004 this list includes Albania, Armenia, Azerbaijan, Costa Rica, Egypt, Georgia, Honduras, Iceland, India, Jordan, Kazakhstan, Mauritius, Morocco, Serbia and Montenegro, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Uzbekistan, Venezuela, Viet Nam and Zimbabwe, as well as the European Community and the African Intellectual Property Organization OAPI).
- <sup>3</sup> Article 1(vi) of the 1991 Act of the UPOV Convention provides that 'variety' means a plant grouping within a single botanical taxon of the lowest known rank, which grouping, irrespective of whether the conditions for the grant of a breeder's right are fully met, can be:
  - defined by the expression of the characteristics resulting from a given genotype or combination of genotypes
  - distinguished from any other plant grouping by the expression of at least one of the said characteristics and
  - considered as a unit with regard to its suitability for being propagated unchanged".
- <sup>4</sup> Such as other breeders, farmers, local communities, etc.
- <sup>5</sup> The exception is the case of essentially derived varieties. The 1991 Act extends the breeder's right to varieties that are essentially derived from the breeder's variety. The new principle is designed to protect the breeder in circumstances where others make a discrete change in his variety (e.g., the addition of a single gene by genetic engineering) and seek to exploit the changed variety.



# DEVELOPING AND IMPLEMENTING NATIONAL SYSTEMS FOR PROTECTING TRADITIONAL KNOWLEDGE: EXPERIENCES IN SELECTED DEVELOPING COUNTRIES

Graham Dutfield

## Introduction<sup>1</sup>

This paper will compare, contrast and evaluate progress in the development and implementation of national systems for protection of traditional knowledge (TK). It is hoped that this exercise will give developing countries a clearer picture of relevant developments taking place in other parts of the world. This in turn may help them to identify procedures, principles and provisions worth adopting, and to anticipate possible pitfalls. Given the necessity of defining the subject matter of the protection system, this study begins by investigating and reviewing some of the key terms and concepts relevant to TK. It does not take for granted that protection of TK is so important as to require no justification. Consequently, it reviews some commonly mentioned reasons why governments might consider protection of TK a priority. The paper then sets out the range of possible legal and policy approaches to the development of national systems. Finally, it compares three of the most significant national systems: those of the Philippines, Costa Rica and Peru.

## What is traditional knowledge?

There is no official or agreed definition of traditional knowledge (TK). The Convention on Biological Diversity (CBD) avoids a definition altogether, adopting the long-winded phrase “knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles”. The CBD also refers to “indigenous and traditional technologies”. Given that the national efforts to protect TK presented here are inspired by the CBD and focus on biodiversity-related TK (usually referred to in the academic literature as *traditional ecological knowledge*), this discussion begins by analysing the convention’s terminology.

Use of the word “innovations” in the CBD indicates an acceptance among the states parties that TK can be just as novel and inventive as “non-traditional” knowledge. The word “practices”, on the other hand, suggests repeatedly used techniques and procedures that may be more established but are still dynamic, adaptive and deserving of protection. As with “innovations”, use of the word “technologies” implies that patents would be the appropriate form of protection (even though this is unlikely to be the case). Another implication is that modalities for transfer of TK should be based on mutually agreed terms, as with any other technologies that may have wider application.

Mugabe<sup>2</sup> (1999) makes a distinction between TK and indigenous knowledge (IK) according to the identity of the holders. While TK holders have “an unwritten corpus of long-standing customs, beliefs, rituals and practices that have been handed down from previous generations”, they do not, unlike indigenous knowledge holders, “necessarily have claim of prior territorial occupancy to the current habitat”. In other words, IK is a subset of TK that is no different from the latter, except that the holders are indigenous peoples rather than non-indigenous communities embodying traditional lifestyles.

In other words, the distinction is being drawn not on the basis that IK and TK are distinct but on the assumption that IK holders have wider political claims than TK holders. While it is important to respect the claims of “indigenous peoples” as recognized in the International Labour Organization (ILO) Convention 169 Concerning Indigenous and Tribal Peoples in Independent Countries, this does not help us understand what TK actually is.

The CBD clearly takes no position concerning whether the knowledge of “indigenous and local communities embodying traditional lifestyles” is any different from the knowledge of the

professional scientist. However, academics have examined and debated this issue. Specifically, the debate revolves around two questions: (1) If TK is adaptive and dynamic – as most anthropologists agree it is – then how is it different from “non-traditional” knowledge? (2) Is science by definition Western, or can “knowledge conducted on objective principles involving the systematized observation of and experimentation with phenomena”<sup>3</sup> exist in all societies, even the most isolated ones?

A growing number of researchers sympathetic to indigenous peoples and local communities argue that they do indeed practice science, but even these researchers tend to consider TK to be different from Western science in a number of fundamental respects. A frequently stated distinction is that Western science — or, perhaps better said, the Western scientific tradition since the Enlightenment — is reductionist, while traditional (scientific) knowledge tends to be holistic. Often, this dichotomy is propounded by those who advocate more of the latter and less of the former in solving environmental problems, especially biodiversity erosion and the allegedly unsustainable nature of modern industrialized agricultural systems.

While such generalizations are helpful, it is important not to exaggerate the differences either. A great deal of hybridization and cross-fertilization takes place to the extent that it would be incorrect to classify TK as an entirely discrete category of knowledge.<sup>4</sup>

In short, then, there is a category of knowledge that we may call TK, of which traditional ecological knowledge (TEK) is a subcategory, and these are different from western scientific knowledge in some fundamental respects. Nonetheless, some TK at least *is* to some degree scientific, even if the form of expression may seem highly *un*scientific to most of us. For example, an indigenous person and a scientist may both know that quinine bark extract can cure malaria, but they are likely to describe what they know in very different ways that may be mutually unintelligible (even when communicated in the same language).<sup>5</sup>

Deeper discussion of these definitional and conceptual controversies lies beyond the scope of this study. The important lesson here is that legislative approaches must be based on a clear definition of the subject matter to be protected, just as intellectual property rights (IPR) mechanisms like patents provide protection only for inventions, copyrights protect artistic and literary works, and so on. Ideally the protectable subject matter should be defined in close consultation with the purported beneficiaries. Also, the broader the definition of TK, the more the rights provided should be limited in some way or another. If only specific categories are defined, it seems reasonable for levels of protection to be stronger than if TK in its broadest sense is to be protected. Above all, the system should be fully consistent with customary norms. So, for example, sacred knowledge that communities consider to be secret and inalienable for all time should not be given a time limit. On the other hand, to treat all conceivable categories of TK as deserving strong and/or permanent protection is unreasonable and would almost certainly go beyond what customary law indicates anyway.<sup>6</sup>

## **Why protect TK?**

Apart from treaties and emerging international norms, which imply both legal and moral imperatives for protecting TK, there are a number of reasons why developing countries may feel motivated to protect it.<sup>7</sup>

### ***To improve the livelihoods of TK holders and communities***

TK is valuable first and foremost to indigenous and local communities that depend on TK for their livelihoods and well-being, as well as for enabling them to sustainably manage and exploit their local ecosystems (e.g. through sustainable low-input agriculture). The World Health Organization (WHO) has stated that 80 per cent of the world’s population depends on traditional medicine for its primary health care and that TK is indispensable for its survival (UNCTAD 2000).

TK is increasingly accepted as an important source of information useful for achieving sustainable development and alleviating poverty. Until the 1970s, development planning and conservation policies had very negative assumptions about traditional rural societies. Poor

rural dwellers were generally assumed to be backward and inimical to change, and their livelihood practices, such as shifting cultivation, were thought to be at best inefficient and unproductive and at worst environmentally destructive. More enlightened attitudes toward the knowledge, skills, and subsistence practices of rural communities in developing countries emerged in the 1970s, according to Adams (1990), “as part of a liberal and populist reaction against the unsuccessful technological triumphalism of rural development practice”. These attitudes have become increasingly mainstream in academia and among international development and conservation agencies. Many multilateral and bilateral donor agencies, including the World Bank; United Nations agencies such as the Food and Agriculture Organization (FAO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the United Nations Environment Programme (UNEP); and several of the International Agricultural Research Centres now recognize and promote the role of TK in sustainable rural development programmes (Warren 1995).

It appears, then, that protecting TK would help local people maintain livelihood security and physical well-being while providing opportunities for economic development. However, at a time when TK is enjoying a measure of mainstream acceptance it has not had before, human cultural diversity is eroding at an accelerating rate as the world steadily becomes more biologically and culturally uniform. According to the World Conservation Union (IUCN) Inter-Commission Task Force on Indigenous Peoples (1997), “cultures are dying out faster than the peoples associated with them. It has been estimated that half the world’s languages – the storehouses of peoples’ intellectual heritages and the framework for their unique understandings of life – will disappear within a century”. According to the Task Force, the main threats include genocide, uncontrolled frontier aggression, military intimidation, extension of government control, unjust land policies, cultural modification policies, and inappropriate conservation management. This suggests that measures to protect TK and the rights of TK holders and their communities need to be implemented with some urgency.

### ***To benefit national economies***

TK benefits national economies and has the potential to benefit them still further. Such TK-based products as handicrafts, medicinal plants, agricultural products, and non-wood forest products (NWFPs) are traded in both domestic and international markets and can provide substantial benefits for exporter countries. For example, some 150 NWFPs are traded internationally in significant quantities (UNCTAD 2000). The total value of the world NWFP trade is on the order of US\$11 billion (FAO 1995).

TK is also used as an input into modern industries such as pharmaceuticals, botanical medicines, cosmetics and toiletries, agriculture and biological pesticides. In most cases, firms based in developed countries that can harness advanced scientific, technological and marketing capabilities capture virtually all the value added. This situation needs to be addressed so that developing countries can capture much more of the value added. However, one should not overestimate the industrial demand for *in situ* genetic resources and associated TK. While enhanced abilities to screen huge quantities of natural products and analyse and manipulate their DNA structures might suggest that bioprospecting will become more popular, it seems more likely that advances in biotechnology and new drug discovery approaches based, for example, on combinatorial chemistry and human genomics and proteomics will, in the long term, reduce industrial interest in natural product research for food, agriculture and health, as well as associated TK. On the other hand, concerns about food safety and other unknown side effects of DNA-modified products may promote interest in natural product research, especially in organic agricultural products (UNCTAD 2000).

Attempts have been made to estimate the contribution of TK, particularly biodiversity-related TK, to modern industry and agriculture. For pharmaceuticals, the estimated market value of plant-based medicines sold in Organisation for Economic Co-operation and Development (OECD) countries in 1985 was US\$43 billion (Principe 1989). That many of these medicines would have used TK leads in their product development is borne out by biochemist Norman Farnsworth’s (1988) estimate that of the 119 plant-based compounds used in medicine worldwide, 74 per cent had the same or related uses as the medicinal plants from which they were

derived. It is particularly difficult to estimate the contribution of traditional crop varieties (land races) to the global economy. However, a study on the use and value of land races for rice breeding in India (Evenson 1996) estimated that rice land races acquired from India and overseas contributed 5.6 per cent, or US\$75 million, to India's rice yields. Assuming that land races contribute equally to other countries where rice is cultivated, the global value added to rice yields by use of land races can be estimated at US\$400 million per year.

But accurately estimating the full value of TK in monetary terms is impossible, first because TK is often an essential component in the development of other products, and second because most TK-derived products never enter modern markets (UNCTAD 2000). In any case, a great deal of TK is likely to have cultural or spiritual value that cannot be quantified in any monetary sense (see Posey 1999).

In short, it seems that protecting TK has the potential to improve the performance of many developing-country economies by enabling greater commercial use of their biological wealth and increasing exports of TK-related products. At the same time, it is important not to overestimate the economic potential of TK.

### ***To conserve the environment***

That a conservation ethic is a prevalent feature of the subsistence and resource management practices of many present-day indigenous or native peoples and traditional communities is supported by a large number of field studies (e.g. Bodley 1976; Clad 1984; Martin 1978; Reichel-Dolmatoff 1976). Several academic studies on traditional communities provide ample evidence that the protection of TK can provide significant environmental benefits. For example, in many forest areas, members of traditional societies plant forest gardens and manage the regeneration of bush fallows in ways that take advantage of natural processes and mimic the biodiversity of natural forests. Researchers are increasingly aware of the extent to which traditional natural resource management can enhance biodiversity, and in this way have realized the extent of anthropogenic landscapes even within "pristine" tropical forests (see e.g. Hecht and Posey 1989; Posey 1990). Oldfield and Alcorn (1991) have said that much of the world's crop diversity is in the custody of farmers who follow age-old farming and land use practices in ecologically complex agricultural systems, which enable the conservation of biodiversity. These traditional communities maintain the centres of crop genetic diversity, which include the traditional cultivars, or land races, that constitute an essential part of the world's crop genetic heritage and non-domesticated plant and animal species.

But this view is sometimes dismissed as romanticism. Some anthropologists claim that in many such societies, this ethic either is not observed by many members or is entirely nonexistent (e.g. Hames 1991; Kalland 1994). Ellen (1986) argues that the many traditional societies observed to impact minimally on the environment do so merely because they are the smallest and most isolated ones. Redford and Stearman (1993) also are sceptical of the "ecologically noble savage" hypothesis (see also Redford 1991 and Stearman 1992). They feel it is inappropriate to generalize about native peoples and traditional communities and their environmental values. They also argue that expecting these communities to continue using only traditional technologies and low-impact subsistence strategies places an unfair burden of responsibility on them and implicitly denies their right to develop according to their own preferences (Kalland 1994; Redford 1991).

### ***To prevent biopiracy***

The issue of biopiracy has become highly contentious and seems to have played a catalysing role in the introduction of access legislation in some developing countries (e.g. Brazil and the Philippines). The term "biopiracy" was coined by the North American advocacy group Rural Advancement Foundation International as part of a counterattack strategy on behalf of developing countries that had been accused by developed countries, particularly the United States, of "intellectual piracy". The word is applied somewhat loosely to the extent that it is not always clear who the victims actually are.<sup>8</sup> It normally refers either to the unauthorized extraction of



biological resources and/or associated TK from developing countries, or to the patenting, without compensation, of spurious “inventions” based on such knowledge or resources.

It is by no means clear how much biopiracy actually goes on. Apart from lack of information, the answer depends on how one differentiates between legitimate and unfair exploitation. The distinction is not always obvious. The answer also depends on whether resources are considered to be wild and unowned or domesticated and owned. A common view among critics of conventional business practice is that most companies do not recognize that they may have a moral obligation to compensate communities providing genetic material for their intellectual contribution, *even when* such material is assumed to be “wild”. Often genetic resources considered “gifts of nature” are in fact the results of many generations of selective crop breeding and landscape management. Essentially the argument is that failing to recognize and compensate for the past and present intellectual contributions of traditional communities is a form of intellectual piracy.

The likely response from industry is that this is not piracy since the present generation may have done little to develop or conserve these resources. The argument might continue that this is, at worst, a policy failure, and that measures – outside the IPR system – could be put into place to ensure that traditional communities are rewarded.

As for the patent-related version of “biopiracy”, there is little doubt that companies are in an advantageous position in the sense that, while a useful characteristic of a plant or animal may be well-known to a traditional community, without being able to describe the phenomenon in the language of chemistry or molecular biology, the community cannot obtain a patent even if it could afford to do so.<sup>9</sup> While it is unlikely that a company could then obtain a patent simply by describing the mode of action or the active compound,<sup>10</sup> it could claim a synthetic version of the compound or even a purified extract.<sup>11</sup> In the absence of a contract or specific regulation, the company would have no requirement to compensate the communities concerned (Dutfield 2000).

TK holders and communities are understandably concerned that one type of IPR system is being universalized and prioritized to the exclusion of all others, including their counterpart customary systems. In this context two specific points can be made. (1) A few countries like the United States and Japan do not recognize undocumented TK held abroad as prior art. Therefore it appears to be possible *in those countries* to reformulate this knowledge – in the sense of presenting it in a more “scientific” way – and apply for a patent. In fact, there have been several well-publicized instances of this. (2) One can argue that the disproportionate legal treatment of commercially useful knowledge held by companies and similarly useful knowledge held by indigenous peoples is inherently unfair. When large industrial concerns in new technological fields find that the IPR system cannot protect their innovations, it seems that new forms of IPR are created in response. TK holders, on the other hand, do not have the necessary political influence to change the system in their favour.<sup>12</sup> Also, they are rarely successful in ensuring that the guidelines of their own custom-based IPR systems are observed by others. One might add that modern IPR reflect, but also help to underpin (through the rewards they provide), a highly competitive winner-take-all business ethos that is largely alien to most, if not all, indigenous communities.

But, apart from possible inequities with respect to patent rules *per se*, it is important to understand that the patent system is also open to abuse. Unfair use of the patent system is possible because intangible property is different from tangible property in at least one important respect. As Drahos (1996) has noted, “abstract objects have no natural boundaries”. In the case of patents, one consequence is that the transaction costs of defining and enforcing rights can be very high. These high costs mean that the system is more accessible to larger companies. This situation may also encourage free-riding by such firms, since they may unfairly seek to use, and even claim legal rights over, the knowledge and innovations of smaller firms, independent inventors and, for example, indigenous peoples, safe in the knowledge that these other parties lack the economic muscle to mount an effective legal challenge.

Another consequence is that claims within a patent are likely to overlap with those in others held by competitors. The mistaken award of patents sometimes exacerbates this situation with overly broad claims encompassing non-original products or processes. This often happens

because patent examiners lack the time to seek out all relevant prior art, but it may also be caused by the deliberate omission from patent applications of prior art that might endanger the validity of the “invention”. Often it is left to the courts to determine the scope of a patent. While in theory indigenous communities and developing-country governments could seek to have a patent award overturned on the grounds that their knowledge or, say, folk varieties have been fraudulently or erroneously claimed, lack of financial and other resources makes this extremely difficult.

**Table 1: Reasons to protect TK**

REASONS		
Moral	Legal	Utilitarian
To fulfil moral obligations towards indigenous/local communities	To comply with international treaties and emerging norms (e.g. the CBD, the Universal Declaration of Human Rights, the International Undertaking on Plant Genetic Resources)	For <i>local</i> economic, welfare (health and food security) and subsistence benefits
To fulfil moral obligations towards indigenous/local communities		For <i>national</i> economic and welfare benefits
		For <i>global</i> economic and welfare benefits
		For improved sustainable management of biodiversity and conservation

In conclusion, there are ample reasons for governments to take steps to legally protect TK (see Table 1). However, it cannot be emphasized enough that protection of TK cannot be dealt with satisfactorily in isolation from the more fundamental needs, interests and rights of the holders of TK, innovations, practices and technologies and their communities.

## Overview of possible approaches to protecting TK

With respect to legal measures, there are various possible ways to approach the task of protecting TK at the national level. These fit into two broad categories.

The first approach is to use, adapt or strengthen (as appropriate) *existing* regulatory regimes or legal instruments. Most of these do not have protection of TK as an explicit objective, yet there may be a possibility, real or theoretical, that they can provide some degree of protection. Such regimes and instruments might include:

- customary law;
- IPR vehicles such as patents, copyrights, trademarks and plant variety rights;
- concepts existing in civil law and common law systems such as unfair competition, privacy, breach of confidence, and passing off; and
- contracts such as license agreements and material transfer agreements.

The second approach is to develop new categories of existing types of regulation, such as *sui generis* IPR- or non-IPR-related systems. These might aim *specifically* to protect TK in a general sense or certain aspects of TK (e.g. folklore or biodiversity-related TK). Alternatively, they might accommodate protection of TK within a broader set of objectives. Examples of the latter situation include biodiversity-related regulations such as access and benefit sharing (ABS) systems and conservation framework legislation. Developing countries should not feel bound to choose between the use of existing legal and policy measures and the development of new ones. In fact, all measures relating to protection of TK should be in harmony. It is likely that existing measures will need to be modified in order to support new measures being formulated. In any case, the experiences so far indicate that some of the new regimes being imple-

**Table 2: Legal approaches for protection of traditional knowledge**

Existing formulations	Modifications/ supplements to existing formulations	<i>Sui generis</i> alternatives
Customary law	Codification/national recognition of customary law	New intellectual property categories
Intellectual property rights: - Patents - Utility models - Plant variety rights - Copyrights - Trademarks - Trade secrets - Geographical indications - Performers' rights	- Certificates of origin - Traditional Knowledge Digital Library - Ombudsman's office - Inclusion of "identifiability" criteria in plant variety right legislation - Domain public payant system	Access and benefit-sharing/ biodiversity management regulations with TK-related provisions
Civil and common law concepts, such as: - Breach of confidence - Privacy - Unfair competition - Trust funds		
Contracts: - Know-how licenses - Material transfer agreements		

mented also provide for modifications to current regimes, at least as these are conventionally formulated. So, for example, some developing countries are using ABS regulations to introduce exclusions from patentability – for example, for DNA sequences (Costa Rica) – and to require patent applicants to fulfil certain ABS-related procedures (Costa Rica and the Andean Community member states).

There are also policy measures and legally non-binding instruments that could offer some degree of protection. These might include codes of conduct and guidelines for researchers and corporations, and grassroots initiatives such as community-controlled TK databases.

Table 2 summarizes the range of possible legal approaches. Table 3 includes some existing and possible legal solutions but also considers other, essentially non-legal solutions.

### Comparison of TK protection systems in the Philippines, Costa Rica, and Peru

So far this study has examined some commonly expressed justifications for protecting TK and has surveyed possible legal, policy, national and local measures and instruments. The rest of the discussion focuses primarily on new or *sui generis* national systems that seek, *inter alia*, to protect biodiversity-related TK. The focus is on three countries: the Philippines, Costa Rica and Peru.<sup>13</sup> These countries present examples of new IPR categories, ABS regulations, or biodiversity conservation or management systems. They are particularly interesting examples because of the broad-based consultative processes – involving TK-holding communities and representative organizations – through which they were developed.

This paper examines, compares and contrasts the processes by which these systems were initiated and developed, as well as their specific provisions dealing with TK. While it would be useful to evaluate the effectiveness of the systems once they have been implemented, this would be difficult since hardly any of the systems has actually been fully implemented at the time of writing.

**Table 3: Legal and policy measures for protecting traditional knowledge**

Measures	Examples and Models
Legislative – IPR	<ul style="list-style-type: none"> <li>- Kenya Industrial Property Act</li> <li>- Peru Regime of Protection of the Collective Knowledge of Indigenous Peoples</li> <li>- OAU African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources</li> <li>- UNESCO/WIPO Model Folklore Provisions</li> <li>- Convention on Farmers and Breeders (Gene Campaign) Community Intellectual Rights (TWN)</li> </ul>
Legislative – non-IPR	<ul style="list-style-type: none"> <li>- Costa Rica Biodiversity Law</li> <li>- Brazil Medida Provisória no. 2.052-1</li> <li>- Andean Community Decision 391</li> <li>- Philippine Indigenous Peoples Rights Act</li> </ul>
Existing legal concepts and principles	<ul style="list-style-type: none"> <li>- Unfair competition</li> <li>- Privacy</li> <li>- Trust funds</li> <li>- Confidentiality</li> <li>- Passing off</li> </ul>
Existing private legal arrangements/contracts	<ul style="list-style-type: none"> <li>- Aguaruna-Searle know-how licence</li> <li>- TBGRI-Arya Vaidya-Kani licence</li> </ul>
Institutional reforms	<ul style="list-style-type: none"> <li>- Certificates of origin</li> <li>- Traditional Knowledge Digital Library</li> <li>- Ombudsman</li> </ul>
Existing legally non-binding instruments	<ul style="list-style-type: none"> <li>- Voluntary agreements/codes of conduct</li> </ul>
Local/NGO initiatives	<ul style="list-style-type: none"> <li>- Community-controlled TK databases</li> </ul>

***Approach and limitations of the study***

Questions to be addressed in each case – as far as is possible – include the following:

*The drafting/legislative process*

- To what extent were TK holders involved in designing the legislation?
- Is a stand-alone TK protection law envisaged, or is such protection part of a law with several different but complementary objectives?
- Is a new type of IPR for TK protection envisaged?

*Specific provisions and features of the system*

- What categories of TK are specifically referred to?
- Who are the holders of the rights?
- Are researchers required to make legal agreements with communities/TK holders?
- Is the prior informed consent of communities a legal requirement for use of biogenetic resources and/or associated TK?
- Are communities allowed an absolute veto right on bioprospecting?
- Do the regulations draw a distinction between academic and commercial bioprospecting?
- Is customary law recognized?
- What types of benefit must be returned to communities?
- Do the national systems place conditions on companies and organizations seeking IPR protection? If so, in what ways?
- To what extent does the system address the capacity-building needs of communities?
- Is formal registration of TK necessary to secure its legal protection?

**Table 4: National systems of TK protection:  
Current progress in development and implementation<sup>a</sup>**

COUNTRY	Title of legislation	Type of legislation	Has the legislation passed the drafting stage?	Is the legislation in force?	Is the legislation being fully implemented?
Brazil	Provisional Measure (Medida Provisória) No. 2.052-1	Access and benefit sharing	Yes	Yes	No
Costa Rica	Biodiversity Law (Ley de Biodiversidad)	Biodiversity conservation/management	Yes	Yes	No
Panama	Law No. 20 - on the special intellectual property regime governing the collective rights of indigenous peoples, for the protection and defense of their cultural identity and their traditional knowledge	TK <i>sui generis</i> system	Yes	Yes	No
Peru	Law No. 27811 (10 August 2002). A law introducing a Protection Regime for the Collective Knowledge of Indigenous Peoples Derived from Biological Resources	TK <i>sui generis</i> system	Yes	Yes	No
Philippines	Executive Order 247 and its Implementing Rules and Regulations	Access and benefit sharing	Yes	Yes	Yes
	Indigenous Peoples Rights Act (IPRA)	Indigenous rights	Yes	Yes	?

<sup>a</sup>This is not meant to be a complete list of national systems. These particular examples are included because they have attracted so much attention.

It should be noted that there are limits to how far comparisons can be made, since the systems vary in the degree to which they have been developed, adopted by legislatures, and implemented (see Table 4).

Finally, while this paper's emphasis on biodiversity-related TK may appear somewhat restrictive, it seems that most of the recent legislative activity on TK is oriented towards this particular category. An exception to the rule is a new law in Panama that focuses on designs, costumes and handicrafts.<sup>14</sup>

### **Results of the study**

A comparison of the processes that led to the creation of national systems<sup>15</sup> for the protection of TK in the Philippines, Peru and Costa Rica, and the specific provisions and features of the systems, leads to the following conclusions.

- *The drafting/legislative processes*

With respect to the processes of drawing up the legislation, it appears that in all three cases TK holders have had some involvement. It is not clear how decisive such involvement was in each case. However, given how rare it is for indigenous peoples and local communities to be consulted about new legislation, these processes, albeit imperfect, appear to be a very positive development. Only in Peru is a stand-alone IPR-type TK protection law envisaged. But, once fully implemented, the other national systems should improve the legal position of indigenous peoples and local communities concerned with protecting their knowledge from unauthorized use and dissemination.

- *Specific provisions and features of the systems*

With respect to specific provisions, the systems vary greatly, yet they share a number of features. While in Costa Rica and Peru the protection is intended for biodiversity-related TK, the Philippine IPRA implicitly accommodates a far broader conception of TK. In the Peruvian regime, only collective knowledge is subject to the system's rules of protection. On the other hand, the Costa Rican system refers to "knowledge, innovations and practices, be they traditional, *individual* or *collective*". The Philippine IPRA uses the term "indigenous knowledge systems and practices", which does not preclude the possibility of individual rights over knowledge. Both Costa Rica and the Philippines adopt the term "community intellectual rights". The origin of this expression appears to be the influential Malaysia-based nongovernmental organization Third World Network, which had drafted a model law known as the Community Intellectual Right Act. Third World Network took the strategic decision to avoid using the word *property* since conventional IPR are considered to be culturally inappropriate and an imposition on communities that supposedly tend to share their knowledge even when it has commercial potential. This is a doubtful supposition in many cases (see Dutfield 2000).

Neither the Costa Rican law nor the Peruvian Regime mentions customary law, though the former legislation upholds the right of communities to oppose access to their resources or associated knowledge "for cultural, spiritual, social, economic or other motives". On the other hand, the requirement for the state to respect customary law is affirmed throughout the text of the IPRA. Prior informed consent is a legal requirement in all the systems in cases of access to the biogenetic resources of indigenous communities and associated TK. In the IPRA, prior informed consent procedures apply also to many other situations and types of transaction involving indigenous communities.

With respect to access to TK and benefit sharing, the Costa Rican law does not as yet require legal agreements to be drawn up between TK-holding communities and research institutions and companies. However, the norms for such transactions are still being drafted, so this may change. The Peruvian regime requires commercial and industrial users to request a licence in the form of a written contract with the TK holders. The Philippine Executive Order requires collectors of biogenetic material to acquire either an academic or a commercial research agreement. Academic institutions subsequently discovering that their research has commercial prospects must apply for a commercial research agreement. Commercial users must inform affected indigenous communities if they discover a commercial application. They are also required to pay royalties to communities if commercial use is derived from their biogenetic resources. But there is no mention in this context of TK.

Of the three systems, only the Costa Rican one places conditions on applications for IPR protection made by firms and research institutions (i.e. the certificate of origin). The drafters of the Philippine system decided not to refer to IPR at all. As for the Peruvian regime, again there is no explicit reference to intellectual property, which implies the absence of conditions on the grant of IPR.<sup>16</sup>

As regards capacity building, the Costa Rican law provides various measures, such as incentives for community participation in the conservation and sustainable use of biodiversity, and finance and assistance for community management of biodiversity (Articles 101 and 102). The Philippine Executive Order does not provide for any capacity-building measures, but the IPRA establishes an Office of Empowerment and Human Rights to ensure *inter alia* "that capacity building mechanisms are instituted and Indigenous Cultural Communities/Indigenous



Peoples are afforded every opportunity, if they so choose, to participate in all levels of decision-making". As for the Peruvian regime, the Fund for the Development of Indigenous Peoples is potentially a very important mechanism for community capacity building.

Both the Costa Rican and Peruvian systems provide for registration of TK as a means of protecting it. In the Costa Rican law, the registration of community intellectual rights is essentially a defensive measure aimed at blocking attempts to claim IPR protection covering existing TK. In the Peruvian regime, such protection is not the only objective, since industrial use of TK is envisaged as a possibility that could, under favourable circumstances, benefit indigenous communities. Thus, the register can help communities negotiate from a stronger bargaining position. It is worth noting that both systems stipulate that the rights of TK holders do not depend on the existence of their knowledge in the register.

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## Notes

- <sup>1</sup> I am grateful to Florence Labregere for her helpful comments on an earlier draft. This paper is dedicated to the late Darrell A. Posey (1947–2001), who for many years courageously and selflessly supported the rights of indigenous peoples.
- <sup>2</sup> African Centre for Technology Studies.
- <sup>3</sup> Definition of *science* in *The Concise Oxford Dictionary*, eighth ed. (1990), Oxford, Oxford University Press.
- <sup>4</sup> Sillitoe (1998) maintains that “scientific knowledge is indisputably anchored culturally in western society, where it largely originated, although with the contemporary communications revolution and cultural globalization, hybridization is occurring and blurring distinctions between scientific and other knowledge on socio-cultural grounds”.
- <sup>5</sup> It might, of course, be countered that since the indigenous peoples of western Amazonia do not really understand why quinine works, their quinine-based treatment is a technology that is not science-based. But if that is so – and I do not wish to appear too relativistic about this – I would suggest that many western “scientific” applications ought likewise to be “downgraded” to technologies, since they are not based on a complete understanding of why they work.
- <sup>6</sup> This is not to deny the right of communities to veto bioprospecting and transfer of their knowledge. However, states do not normally grant knowledge holders absolute ownership rights over all categories of their knowledge, and such “knowledge mercantilism” is certainly inadvisable. It should be

noted that indigenous communities are not precluded from using and adapting knowledge from outside.

- <sup>7</sup> Some of the following text is derived from Dutfield 1999 and 2000 and from UNCTAD 2000.
- <sup>8</sup> This comment is not to make light of people's concerns about biopiracy but to suggest that in cases where the distribution of a given resource is very wide or knowledge is held by large numbers of people or communities, it may not be clear who, if anyone, is actually being exploited.
- <sup>9</sup> It may be able to if it can describe a specific formulation, even in fairly non-technical terms.
- <sup>10</sup> In some circumstances this may be allowable under the US patent system.
- <sup>11</sup> I am grateful to Tim Roberts for clarifying this point.
- <sup>12</sup> According to Drahos, "while new forms of intellectual property in the form of protection for semiconductors or plant varieties have readily been minted for transnational industrial elites both nationally and internationally, the recognition of indigenous intellectual property forms has proceeded slowly or not at all. This selective approach to solving free-riding problems comes into sharp focus when one compares the evolution of protection for the semiconductor chip and protection of folklore. Prior to 1984 manufacturers of computer chips in the United States had complained that existing intellectual property regimes often failed to protect their products. Their chips often failed to clear the patent hurdles of novelty and inventiveness... In 1984 the Semiconductor Chip Protection Act was passed... In contrast, the issue of protection for indigenous knowledge has largely remained just that, an issue" (Drahos 1997).
- <sup>13</sup> The case of Brazil might appear a suitable one, but it appears that, unlike in these examples, the legislation is provisional and did not result from any wide consultative process.
- <sup>14</sup> Law No. 20 of 26 June 2000: "Del régimen especial de propiedad intelectual sobre los derechos colectivos de los pueblos indígenas, para la protección y defensa de su identidad cultural y de sus conocimientos tradicionales, y se dictan otras disposiciones" [on the special intellectual property regime governing the collective rights of indigenous peoples, for the protection and defense of their cultural identity and their traditional knowledge].
- <sup>15</sup> Details of these systems are given in the respective country papers.
- <sup>16</sup> However, a separate but related "proposal of regulation on access to genetic resources" provides for the possibility of imposing benefit-sharing requirements on intellectual property holders.



# STRENGTHENING TRADITIONAL KNOWLEDGE SYSTEMS AND CUSTOMARY LAWS

Maui Solomon

## Introduction

The world has an incredibly diverse range of indigenous cultures, each with its own history of colonization and its own legal systems. Nevertheless there are many common threads that permeate most, if not all, indigenous cultures. Indigenous peoples have their own spiritual beliefs and holistic lifestyles in which they view themselves as part of, and not superior to, the natural world in which they live.

This discussion covers the following topics: some of the essential conflicts between the existing intellectual property rights (IPR) system and the customary law systems of indigenous peoples; why IPR are an undesirable mechanism for protecting the knowledge of indigenous cultures; the nature of indigenous custom law; the imposition of a monocultural legal and political system on the Maori people and its effects on them; some initiatives being made by Maori tribes to enhance and protect their fast-disappearing traditional knowledge (TK) systems;<sup>1</sup> and the need to give priority to the strengthening and development of existing customary law systems, which reflect and nourish the underlying values of the relevant cultures and associated biodiversity.

In most indigenous communities, respect for the natural world has been a major factor in the preservation and maintenance of biological diversity. The values of indigenous peoples must be respected and protected within the available legal frameworks so as to avoid irrevocably endangering both cultural and biological diversity. The discussion therefore focuses on the Maori and Moriori peoples and cultures of Aotearoa/New Zealand, and comments and observations relate specifically to the New Zealand cultural context. Obvious parallels can be drawn with many, if not most, indigenous cultures around the world.

## Intellectual property rights and indigenous peoples' rights

Western IPR are private individual rights. They evolved out of the Industrial Revolution to recognize and protect the legal and economic interests of private enterprise in relation to investment of intellectual and financial capital. By comparison, indigenous peoples' rights have evolved over many millennia as a result of the collective and individual efforts of closely connected kinship groups. By their nature, indigenous peoples' rights are communal or collective. These communal systems acknowledge obligations to respect the inherent life force (*mauri*) of natural resources before humans can exploit them. Reciprocal obligations of respect for the spiritual integrity of the natural world are regarded as fundamental by indigenous cultures the world over.

The IPR system seeks to regulate and control rights of ownership and access to the means to create wealth. Indigenous cultures seek to understand and harmonize humankind's relationship with the natural world for their survival. The IPR system is protected and entrenched within the modern legal regimes of the world. Indigenous customary systems, because of their (usually) collective nature, are generally unrecognized and unprotected within modern legal systems.

While there may be cases where IPR *may* be an appropriate mode of protection, these cases are the exception and not the rule. The main focus needs to be on strengthening existing customary laws and their underlying value systems, not on adapting these systems to fit within the current IPR regime. In other words, round pegs do not fit well within square holes.

## Customary laws: What are they?

This section attempts to explain what customary laws are and how they operate today.

Like most indigenous people, the Maori have a unique relationship with the natural world. They view themselves as part of and not dominant over their natural flora and fauna. The people, the land, the sea, the forest and all living creatures are considered members of the same family.

The Maori name for indigenous peoples is *tangata whenua* - literally, “peoples of the land”. The Moriori people of *Rekohu* claim to have sprung from the earth (*no ro whenua ake*).

John Patterson, an environmental commentator, has noted: “A philosophy of respect for Maori involves understanding the nature of each creature and ecosystem, understanding their distinctive qualities, understanding what makes them of value to one another, and learning to respect them for what they are. If we manage to do all that, chances are we will have a good environmental philosophy. Although there is more than one way of expressing in Maori the idea that the natural world must be respected, the concepts involved are not independent. The idea of life force or *mauri*, for example, might not on its own seem to offer an outsider a compelling reason for respecting other creatures. It may not be until we realize that our *mauri* are interconnected with the *mauri* of all other creatures that we see the importance, to us, of treating them with respect. That is, the ideas of ‘*mauri*’ and ‘kinship’ can be employed together, in a Maori-based environmental philosophy” (Patterson, 2000: 69–70).

This indigenous cultural belief system or environmental philosophy is chiefly concerned with ensuring that resources are utilized in a way that protects them for future posterity. By contrast, the western capitalist system is mainly concerned with ensuring that resources are utilized for present and future prosperity; resources are seen as objects for human exploitation. A balance of these two systems is needed.

The Maori world is not perfect; mistakes have been made in people’s interaction with their environment. Some species (e.g. the large flightless Moa bird found by the Maori on their arrival in Aotearoa) have been hunted to extinction. Lessons learned from such actions were incorporated into Maori customary practices. With population increases and pressures on scarce resources, prohibitions (*rahu*) were introduced on hunting certain species at certain times of the year. Homage was paid to the spiritual guardians of the land, the sea and the forests. In order for Maori to survive and prosper from the land and the sea, they learned first to acknowledge and respect the deities of those places. People spoke ritual blessings (*karakia*) and sought permission before cutting down a tree for canoe building or taking fish from the sea to feed their families.

This reciprocity of respect and caring between the people and their creator gods was central to the relationship. If people showed caring and respect for the ancient guardians (*kaitiaki*), the latter in turn would ensure that the needs of the people were satisfied. People had the right to access and utilize resources within a tribal territory, but only after observing the ritual obligations of reciprocity and respect.

Maori society was essentially communal by nature, with property rights centred within and exercised by extended families (*whanau*) and sub-tribes (*hapu*), all based on tribal or genealogical (*whakapapa*) connections. In times of war or other political upheaval, the *hapu* form themselves into larger alliances (*iwi*). The concept of land ownership was foreign to the Maori; rather, they had communal use rights and retained the power/prestige/authority (*mana*) to exclude others from it. Decision making among the Maori was usually vested in those with hereditary chiefly authority, but that authority was not absolute. Decisions had to reflect the will of the people, and there was long and vigorous debate at the traditional meeting place (*marae*) before important decisions were made.

## Suppression of customary law systems

Wherever colonization has occurred around the world, a common pattern of destruction and dismantling of indigenous systems of customary law has occurred. The system of parliamen-



tary representation imposed on the Maori after 1840 was based on the monocultural dominance of British constitutionalism. From 1856 to 1868, Maori representation was at the discretion of the Governor. In 1868, the Maori were represented through four seats in the Parliament (the number was increased to five seats only in the 1999 election) and were powerless to prevent the framing of legislation and policies that continued the confiscations of land and ignored Maori aspirations.

By 1877, in the infamous case of *Wi Parata v. The Bishop of Wellington*, Chief Justice Prendergrast declared the Treaty of Waitangi to be a “simple nullity”. He could not accept that the Maori had “any kind of civil government” or “any settled system of law”, and he considered that they certainly were not capable of entering into an international treaty. In 1901, the Privy Council in *Nireaha Tamaki v. Baker* rejected the argument that “there is no customary law of the Maori of which the Courts can take cognizance”. But any cognizance taken was in the context of the all-encompassing assumptions of British common law, where Maori customary law is treated as analogous to “local custom” in England. There custom is easily supplanted by statute and is usually given recognition only where the relevant statute specifically requires it. Since the Maori were politically powerless to influence the law-making process, their customary law and practices were marginalized.

### ***The renaissance of indigenous rights***

The past two decades have seen a revival and reassertion by indigenous peoples worldwide of their customary rights both at the local and international levels. Indigenous peoples and others working on the United Nations Draft Declaration on the Rights of Indigenous Peoples have raised international awareness of indigenous rights issues. The growing recognition by developed countries that the preservation of cultural diversity is inextricably linked to the preservation of biological diversity has also been a vital factor. Lobbying by indigenous peoples (with support from certain States Parties) at the Earth Summit resulted in the inclusion of Article 8(j) and other provisions in the Convention on Biological Diversity (CBD).

Increasing the effective participation by and consultation of indigenous peoples at all levels within the UN system will be vital for the successful implementation of provisions such as Article 8(j) and related provisions of the CBD to make possible an acceptable final decision-making process. Adequate resources need to be made available by States, the United Nations and other international agencies. In order to find durable solutions to issues such as recognition and protection of TK systems and customary laws, States and international organizations need to talk *with*, not just *about*, indigenous peoples.

The International Society of Ethnobiologists (ISE) and many other organizations provide an open forum for direct debate and dialogue between indigenous peoples and the scientific community. This is extremely valuable for building understanding and dialogue between indigenous and non-indigenous peoples.

ISE has developed a Code of Ethics that calls on TK researchers to respect and strengthen indigenous cultural systems. It includes recognition by researchers of the principles of self-determination, prior informed consent, active protection of cultural systems, and equitable benefit sharing. The code has been used by indigenous groups and research institutions alike to defend their positions regarding research into traditional botanical knowledge, including the research project by the Maya ICBG that was proposed in Chiapas, Mexico. The code is a landmark in the recognition and protection of TK amid increasing haste to gain access to and commercialize TK of genetic resources.

At the local level, indigenous groups’ active role in reasserting their rights has led to significant progress in New Zealand. The Maori have regained a small measure of control and ownership over resources, including broadcasting rights for promotion of the Maori language; some control of fisheries, land, forests and sacred sites (*waahi tapu*); and cash settlements. Treaty settlements are seen by the Maori as restoring to them resources necessary to assist in the development of an economic base and strengthening of their cultural base.

Treaty claims and court action are often the only resort that the Maori have for gaining recognition and protection of their cultural and legal rights. While there have been some suc-

cesses in the recent past, the process is very slow and many Maori are beginning to lose faith in the Waitangi tribunal process. Funding for tribunal hearings is scarce. The Moriori tribe (to which the author belongs) completed its hearing in 1995 and is still waiting for the tribunal to issue a report.

Meanwhile, some politicians are undermining the tribunal process. In a recent example, a Minister of the Crown made a statement to the media the day before an urgent tribunal hearing into some tribes' claim to petroleum found on their traditional lands. The Minister said that the government would ignore any findings of the tribunal and the courts if they found in favour of the Maori. While tribunal findings (unlike court findings) are not binding on the Crown, such statements undermine Maori confidence in the only process that exists in New Zealand today to deal with treaty claims. The tribunal is an important release valve for racial tension in New Zealand society. Some may say that it has inflamed racial tension by upholding many Maori claims, but without some form of redress or outlet for their longstanding grievances, the Maori will continue to feel marginalized by the majority culture.

The extent to which Maori customs and law can be effective within New Zealand's current legal system depends on incorporation of protective provisions into relevant legislation. This in turn depends on the will of Parliament to include such provisions in new legislation. The Maori have consistently argued for inclusion of provisions respecting their treaty rights in both domestic law and international trade agreements entered into by the Government of New Zealand. The recently signed Free Trade Agreement between New Zealand and Singapore is an example of this. Unfortunately for the Maori, the "will" of Parliament reflects the majority non-Maori opinion, which is usually opposed to including such protective measures. (The Maori comprise 15 per cent of the population). For example, in 1995 Parliament voted (narrowly) against the inclusion of a treaty protection clause in the bill implementing the Uruguay Round of the GATT-TRIPS Agreement.

### ***The Wai 262 claim***

The major initiative by the Maori to protect and strengthen their customary laws and TK is a claim filed in 1991 with the Waitangi Tribunal and known (colloquially) as the Wai 262 indigenous flora and fauna claim.

Concerned over the increasing loss of native plants and animals, the destruction of ecosystems and the continuing erosion of *matauranga Maori*, a group of Maori elders met in 1988 to formulate the claim to the Waitangi Tribunal. The claimants represent (i) *Ngati Kuri*, (ii) *Te Rarawa*, (iii) *Ngati Wai*, *Ngati Porou*, and (iv) *Ngati Kahungunu*. Author of this paper represents the three tribes of Ngati Kuri, Te Rarawa and Ngati Wai.

The Wai 262 claim concerns indigenous flora, fauna, and cultural and intellectual heritage rights. It is founded on the rights guaranteed in Article 2 of the Treaty of Waitangi, which guaranteed to the Maori (in the English version) "the full exclusive and undisturbed possession of their lands, forests, fisheries and other properties..." In the Maori version they were guaranteed *tino rangatiratanga* - translated as "their full chiefly authority") over these resources "*me o ratou taonga katoa*" - "all of their treasures").

The Statement of Claim was filed in 1991 with the Waitangi Tribunal and amended in 1997.

The claim relates to Te Tino Rangatiratanga o Te Iwi Maori in respect of indigenous flora and fauna *me o ratou taonga katoa* including but not limited to *matauranga*, *whakairo*, *waahi tapu*, biodiversity, genetics, Maori symbols and designs and their use and development and associated indigenous, cultural and customary heritage rights in relation to such taonga. 'Taonga' in this claim refers to all elements of a tribal groups' estate, both material and non-material, tangible and intangible.

Reference to 'indigenous, cultural and customary heritage rights' in this claim is deemed to include all rights (including intellectual and property rights) past, present and future in relation to *taonga o te Iwi Maori*.

*Te tino rangatiratanga o te Iwi Maori* is the authority residing within and exercised by *te Iwi Maori o Aotearoa me te Waipounamu/Rekohu* prior to the arrival of the colonial government

which includes but is not limited to the full and exclusive rights and responsibilities of *manaakitanga*, *kaitiakitanga* and *tapu* and the development of these rights.

*Te tino rangatiratanga o te Iwi Maori* incorporates a right of development which permits the *Iwi* to conserve, control, utilise and exercise rights over indigenous flora and fauna *me o ratou taonga katoa*.

*Te tino rangatiratanga o te Iwi Maori* incorporated and incorporates:

- Decision-making authority over the conservation, control of, and proprietary interests in natural resources including indigenous flora and fauna (*me o ratou taonga katoa*);
- The right to determine indigenous cultural and customary heritage rights in the knowledge and use of indigenous flora and fauna (*me o ratou taonga katoa*);
- The right to participate in, benefit from, and make decisions about the application of existing and future technological advances as they relate to the breeding, genetic manipulation and other processes relevant to the use of indigenous flora and fauna;
- The right to control and make decisions about the propagation, development, transport, study or sale of indigenous flora and fauna;
- The right to protect, enhance and transmit the cultural, medicinal and spiritual knowledge and concepts found in the life cycles of indigenous flora and fauna;
- A right to environmental well-being dependent upon the nurturing and wise use of indigenous flora and fauna;
- The right to participate in, benefit from and make decisions about the application, development, uses and sale of *me o ratou taonga katoa*;
- The right to protect, enhance and transmit the cultural and spiritual knowledge and concepts found in *me o ratou taonga katoa*.

The exercise of *te tino rangatiratanga o te Iwi Maori* as it relates to indigenous flora and fauna *me o ratou taonga katoa* was and is a recognition of an *Iwi* interest in the continued existence of flora and fauna and cultural taonga as particular species and as interconnected threads of *te ao turoa*.

That such recognition vested in *whanau*, *hapu* and *iwi* all rights and responsibilities relating to the protection, control, conservation, management, treatment, propagation, sale, dispersal, utilisation and restrictions upon the use of indigenous flora and fauna and the genetic resources contained therein.

Indigenous flora and fauna includes the genetic resources contained therein and the environment in which they reside.

*Me o ratou taonga katoa* includes but is not limited to *whakairo*, *rongoa Maori*, *waahi tapu*, *pa* sites and Maori cultural images, designs and symbols and associated indigenous, cultural and customary heritage rights in relation to such taonga.

At the heart of the claim is protection of the underlying values that support the TK systems of the claimant tribes. Legal systems are based on and reflect the values of a society. In New Zealand, as in every country where indigenous peoples have been colonized, those values reflect the majority non-indigenous European culture. To the extent that domestic legislation incorporates a requirement to “take into account” Maori values and treaty rights, these provisions are ad hoc, limited and inconsistently applied.

The claimants say that they are, or are likely to be, prejudicially affected by ordinances, acts, regulations, Orders in Council, proclamations, notices and other statutory instruments and by policies, practices, acts or omissions adopted by or proposed to be adopted by or on behalf of the Crown as set out in this statement of claim.

The claimants further claim that all of the ordinances, acts, regulations, orders, proclamations, notices and other statutory instruments, as well as the policies, practices, acts or omissions adopted by or on behalf of the Crown, referred to are and remain inconsistent with the principles of the Treaty of Waitangi.

The claim includes references to native species of flora and fauna and to the Crown’s obligations to the Maori in relation to international treaties and Conventions. In that context, the claimants argue that the Government of New Zealand should not make commitments under

international treaties and protocols without first consulting the Maori and reaching agreement with them where these treaties affect Maori rights under the Treaty of Waitangi.

Without the rights of *tinu rangatiratanga* (including rights of ownership, control and decision-making), the Maori are unable to exercise their obligations of guardianship and protection (*kaitiakitanga*) and sharing and providing for others (*manaakitanga*). How can the Maori care for the land and its resources if they are denied ownership or control over it?

The Maori claimants are seeking the following remedies:

- recognition of the continued relevance of their customary laws and values in a modern-day context
- restoration of customary control and ownership over resources that were guaranteed to them under the Treaty of Waitangi signed in 1840

The Maori assert that the fact that the dominant culture has ignored a constitutional compact for 160 years does not invalidate that compact.

### **A framework for protecting Maori customary law**

A. It is critically important to the claimants that any remedies or solutions be built on a foundation of Maori customary values (*Tikanga Maori*). In local language this foundation is referred to as the “*Tikanga Maori Framework of Protection*”. Just “tweaking the edges” of the existing legislative regime and IPR system will not provide the needed protection. Strengthening of the existing customary laws and values system is considered essential by the Maori.

B. Although aspects of the existing IPR system may be accommodated within a *Tikanga Maori Framework*, it is important to start from first principles. That means viewing any system of protection from a Maori cultural viewpoint, not a viewpoint imposed from outside.

C. At the time of writing, the claimants were carefully considering what such a system may look like, how it will be structured and how it will operate in practice. However, any system that is to operate effectively must be owned and controlled by Maori, not by a government agency set up by statute, with members appointed by the government. State-imposed structures and processes have in the past (with a few exceptions) failed to protect or enhance Maori social, economic and cultural aspirations. Past attempts to Europeanize the Maori and assimilate them into the mainstream culture have not worked. New and innovative solutions are needed.

D. A *Tikanga Maori Framework of Protection* would have some or all of the following characteristics:

- The system would be developed by Maori (in consultation with the government). It would be based in *Tikanga Maori*, reflecting a Maori ethos and cultural values.
- Inherent in this system would be the acknowledgement, protection and promotion of rights and obligations to manage, utilize and protect resources in accordance with Maori cultural values and preferences. Flexibility would be very important.
- Whatever structure or structures are chosen would need to be flexible enough to take account of issues affecting Maori in a national sense as well as at the regional and local traditional meeting place (*marae*) levels. The structure must also accommodate collective rights as well as the rights of individuals such as Maori artists, carvers, musicians and designers.
- How such a framework is mandated by Maori would be a vital and challenging ingredient. In New Zealand today there are many national bodies that represent Maori, including the Maori Congress (an *iwi* or tribally based organization), the New Zealand Maori Council (a statutory body), the Maori Women’s Welfare League, the Confederation of United Tribes (based on the 1835 Declaration of Independence), and others. There are also various *iwi* organizations, Urban Maori Authorities, Land Trusts, Maori Incorporations and Marae trustees, to name a few.
- Indeed, one of the most challenging issues confronting Maori (and indigenous peoples elsewhere) is the vexed issue of who has the authority or mandate to represent and make decisions for their people. It is difficult and sometimes impossible to know who is the appropriate body or persons to deal with in a given situation. This has particular relevance in the context of developing prior informed consent procedures. The Maori Land Court



has the power to rule on who represents a group of Maori for a given purpose, and consideration is currently being given to strengthening these procedures. Traditional tribal structures in New Zealand are currently facing a serious challenge from Urban Maori Authorities over resource allocation and related issues. Whatever decision-making structures Maori finally decide on will need to take into account both traditional and modern-day Maori aspirations.

- In terms of funding for the framework, the claimants would seek an allocation of funds from the Crown (as part of their compensation package) in order to undertake nationwide consultation with tribes and urban Maori to discuss the formation of any new structure. Funding would also be needed to implement and administer the new body on an ongoing basis.
- Finally, there are considerations of enforceability. In order to enforce compliance with the new regime, some form of legal recognition and protection within the current New Zealand legal system would be necessary. Also needed would be non-legal codes of ethics, as well as protocols containing rights and obligations, designed to educate and persuade voluntary compliance with the framework of protection.
- One of the dilemmas for Maori (and indigenous peoples everywhere) is that the codification of their values within the mainstream legal system will result in the reinterpretation of those values by the predominantly non-Maori people who make up the legal and regulatory enforcement system in New Zealand. On the other hand, without the sanction of the law there is no guarantee of protection. The solution to this problem is not immediately apparent, although the appointment of suitably qualified Maori to important decision-making bodies would be a good start.

It will also be important to work out how the Maori system of protection interfaces with the mainstream legal system. This will involve a process of direct negotiation with the government, either in the development of the protection system or once it is in place.

### **Proposed national or regionally based TK protection authority**

A proposed national or regionally based TK protection authority would have the following responsibilities:

- It would act as a referral body to *iwi* (tribes), *hapu* (sub-tribes) or *whanau* (families) or individuals, once it is determined at which level of Maori decision-making a given issue is most appropriately advanced. Issues that obviously affected particular tribes would be immediately referred to that tribe to deal with. So, for example, if someone wanted to research the flax snail (*Pupu Harakeke*) he or she would have to deal with the Ngati Kuri people of the Far North. If a matter affected Maori at a national level, then a national body could undertake research at that level, acting as a support agency for Maori tribes and organisations in their own research.
- It would liaison with mainstream government departments, research institutions and private enterprises.
- It would be a consultative body with Maoridom. This would be a key component of any new authority. Tribal meetings (*hui*) and consultation with Maori would need to occur on a regular basis.
- It would help the Maori formulate policies to assist them in their role as *kaitiaki* of their various treasured things (*taonga*). Policies might deal with issues of respect for cultural values, access, use and, where appropriate, commercial exploitation. Such policies themselves would have to be flexible to take account of the different tikanga and relationship that tribes or sub-tribes (*hapu*) have with the taonga within their own tribal territories (*rohe*).
- It would act as a principal point of contact for those wishing to access and exploit traditional Maori knowledge of native flora and fauna for commercial gain. It might also act as a negotiating body with research institutions or pharmaceutical companies where the local tribe requested such assistance.
- It would develop awareness and understanding of Maori cultural values and their application within a modern-day context. The audience might include the general public, government agencies and the corporate sector.

The Waitangi Tribunal (which is confronted with over 800 claims to deal with) is short of funds, and the claim is still some four to five years away from completion. In response, many of the claimants have decided to develop their own system based on the framework outlined above. One of the options available to Maori is to negotiate directly with the Crown a settlement of the claim, including the development of an agreed system of protection. Maori are currently exploring these options.

### ***Interim measures of protection***

The Maori claimants have no control over the pace at which the system processes the claim. In the meantime, their traditional knowledge (*matauranga*) continues to be the subject of exploitation and unauthorized use. To counter this, Maori are beginning to examine alternative interim protection measures as means to protect their traditional values. One example of this is an initiative being undertaken by Maori artists (including graphic designers, carvers, weavers and musicians) in collaboration with a national arts body in New Zealand to develop a national brand name and logo for Maori-made products that would be used exclusively by Maori artists. The Maori artists intend to seek legal protection by trademarking the logo and brand name. Following are key elements of this process:

- Maori artists are working in close collaboration with the National Arts Council (a government-funded statutory body) to develop the Maori mark.
- A number of special meetings (*wananga*) have been convened around the country to discuss and debate important values, customs and designs and to develop options for protection.
- A decision was made to begin use of an existing IPR tool (trademark) to protect traditional and contemporary Maori artistic expressions.
- Initially the IPR will remain with the National Arts Council, but it is proposed that these rights be transferred within three years to a separate entity owned and controlled by Maori people.
- Maori people are not only being consulted but are fully involved in the decision making at every stage of the process and will ultimately have control and ownership of this tool for protecting Maori artworks.

As time passes, the issues raised by the WAI 262 Claim are assuming greater importance. The past decade has seen rapid growth of international interest in “cultural heritage tourism”. Tourists are attracted to the cultures of the indigenous peoples, and their artwork, music and indigenous designs are becoming highly prized commodities and powerful marketing and branding tools. The use of Maori symbolism by Telecom, Air NZ and Adidas in promoting the All Blacks rugby team is just one set of examples.

Many more businesses in New Zealand are beginning to appreciate the “added value” and marketing opportunities that an association with a distinctive Maori identity and Maori place names and traditions give to New Zealand businesses operating in the international market. As Brian Richards, marketing strategist for this Maori-made mark, observed in 1994:

“In worldwide research on New Zealand, ‘sheep’ and ‘green’ are the only two icons that stand out. ... We can actually add value using our indigenous products. It will come from our Maori people, our artists, our playwrights and designers. ... Maori custom and culture is absolutely wonderful. There is potential for developing Maori icons to our culture... I would love to see New Zealand borrow from Maori elements and use them in a modern context, because they help to position us worldwide... By drawing on Maori culture and referencing, we could produce the most stunning textiles and fabric. Nobody yet has exploited Maori graphics and curtaining fabrics...” (p. 209).

As commercial interest in indigenous culture, artwork and knowledge continues to grow, tribes need to retain control over, regulate and protect their cultural heritage rights.

The use and exploitation of indigenous knowledge and culture by non-indigenous people can be highly offensive. There is usually little recognition of the people to whom the knowledge belongs, and relatively few benefits are returned to those people.



The Wai 262 claim makes reference to many examples of the sorts of offence that can be caused when TK is treated without due respect for the rights of the holders of that knowledge. Maori designs, like the *koru* or *kowhaiwhai*, appear on numerous government and corporate logos and adorn the edges of glossy publications. Web sites and advertisements display *tukutuku* work to enhance the “indigenous flavour” of the product, often in circumstances where such tapu designs would never be used for commercial purposes. A profitable chain of camper vans relies on the heritage of a very important ancestor (*tupuna*), *Maui*, to promote its product. Imagine the public condemnation if a Maori company were to start driving around in “Jesus” camper vans! Air New Zealand carpeted large areas of its airports with the koru design, for it to be walked on by thousands of travellers each week. After complaints from Maori, the carpets were removed. *Marae* are finding photographs of their carved meeting houses and other cultural symbols being reproduced on tourist brochures or postcards.

Maori culture makes New Zealand unique in the world. There is enormous value in this positive indigenous imaging.

During the visits of international leaders, for example for an APEC Conference, Maori are called on to assist in welcoming ceremonies and cultural performances. A few years ago, a picture of a leading Maori elder from the *Ngati Whatua* tribe giving a traditional *hongi* greeting to US President Bill Clinton was beamed all over the globe, creating a positive image of New Zealand in the eyes of the world.

### **Are western values and indigenous values reconcilable?**

An appreciation and understanding of indigenous cultural values are critical to developing any framework for protection. The old methods of imposing a monocultural framework on minority indigenous cultures and expecting the latter to conform simply will not work. The ISE model is a good example of how western-trained scientists and indigenous peoples can work to bridge gaps in cultural understanding.

For example, a Maori person may look at a native *totara* tree and pay homage to an ancient member of his or her family (*whanau*). A scientist or geneticist may look at the same tree and think of ways to alter its genetic programming to make it grow faster or make it resistant to certain diseases – in other words, to “improve” the tree through modern technology.

Maori regard the genetic modification of flora and fauna as interference with their genealogy (*whakapapa*). Modifying or mixing the genes of the same or different species is analogous to genetic experiments on one’s own family members. While the Maori attitude may be regarded as emotive or even “cultural blackmail”, the issue is really one of respect – respect for the fact that Maori and indigenous peoples everywhere have a special relationship with their natural world that needs to be understood in the context of the wider debate about the use and development of genetic resources.

This issue has particular relevance in New Zealand today, with the recent approval by the Environmental Risk Management Authority (ERMA) of an application to implant a human gene into a cow as a medical experiment. The application was opposed by a number of Maori groups, including the tribe on whose land the cows are to be located. They objected on cultural and spiritual grounds and stated that the mixing of human genes with those of an animal was a violation of the tapu associated with the essential life essence (*mauri*) of the land (*whenua*) and their relationship with that land. They also expressed concerns over the unknown risks (which were conceded by the applicant) and requested that ERMA apply the precautionary principle and not grant the application until the risks were better understood. In its decision granting the application, the Authority rejected the concerns of the Maori people as “intangible” and therefore to be accorded much less weight than scientific evidence in favour of the application. In doing so it also dismissed the opinions of its own in-house Maori advisory committee. The decision has been referred to the High Court for review.

Under its governing legislation, ERMA has a statutory duty to take into account the relationship of the Maori people with their lands, waters, sacred sites and other treasured things (*taonga*). The complaint is not so much that the ERMA found against the Maori objectors, but that it clearly demonstrated in its written decision that it did not understand or comprehend the cul-

tural (or indeed legal) viewpoints being expressed by Maori. In order to take into account the Maori spiritual concerns, a decision maker in a situation like this should first have an understanding and appreciation of what those concerns are; otherwise the Maori will feel that their viewpoint has not been heard or understood.

This problem is symptomatic of the circumstances of many colonized indigenous peoples who are required to argue their case (and place their faith) in a justice system that is in many respects foreign to their cultural values. The solution is to ensure that these people's views and opinions are properly understood and protected. The same might be said of researchers seeking to gain access to TK and genetic resources of indigenous peoples. It is crucial that the underlying cultural values be appreciated before work is undertaken, and that the local people be fully engaged in the decision-making processes.

## Conclusions

First priority needs to be given to strengthening and protecting existing customary law systems, because of the important values inherent in those systems, which are critical to the maintenance of the cultures concerned and also to the maintenance and enhancement of biological diversity.

Issues such as the extent to which the IPR system can be used to protect TK and the development of *sui generis* systems (and other relevant mechanisms) will need to be considered as part of this larger picture. However, this should be in the context of how these various mechanisms can be used to enhance and protect TK and customary laws, rather than access and exploit such knowledge.

Finally, to ensure that indigenous peoples participate effectively in the development of these protective systems, an international expert group of indigenous peoples should be established to work directly with States and UN agencies to develop international guidelines and principles. States and UN agencies must ensure that adequate resources are made available to establish and fund this expert group on an ongoing basis. This approach will ensure not only effective participation but also a degree of consistency and integration among the various agencies with responsibilities in this area.

### Welcome address by the author in Maori tradition

<i>Ko Te Rangaapene Te Maunga</i>	<i>(Te Rangaapene is my mountain)</i>
<i>Ko Te Awa Inganga Te Awa</i>	<i>(Te Awa Inganga is my river)</i>
<i>Ko Manukau Te Whenua Tapu</i>	<i>(Manukau is my sacred lands)</i>
<i>Ko Te Awapatiki Te Kopinga</i>	<i>(Te Awapatiki is the sacred meeting place)</i>
<i>Ko Te Kopinga Te Marae</i>	<i>(Te Kopinga is our meeting house)</i>
<i>Ko Rekohu Te Motu</i>	<i>(Chatham Islands is the island)</i>
<i>Ko Tame Horomona Rehe Te Rangatira</i>	<i>(Tommy Solomon is my grandfather)</i>
<i>Ko Rongomaiwhenua Te Karapuna</i>	<i>(Rongomaiwhenua was the founding ancestor on Rekohu)</i>
<i>Ko Moriori Te Iwi</i>	<i>(Moriori is my tribe)</i>
<i>Tihei Mauri Ora!</i>	<i>(I sneeze the breath of life)</i>
<i>Ko tenei te mihi ki a koutou, te hau kainga, nga tangata whenua o tenei motu.</i>	<i>(Greetings to you the local Tangata Whenua (people of this land) and to other peoples present at this meeting)</i>
<i>He mihi hoki ki a koutou katoa e huihui mai nei</i>	
<i>Tena koutou katoa</i>	

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## Notes

- <sup>1</sup> The terms “indigenous peoples” and “indigenous cultures” are used here to refer to indigenous, traditional and local peoples and their cultures.



# EXPERIENCES AND LESSONS LEARNED REGARDING THE USE OF EXISTING INTELLECTUAL PROPERTY RIGHTS INSTRUMENTS FOR THE PROTECTION OF TRADITIONAL KNOWLEDGE IN KENYA

Joseph M. Mbeva

## Introduction

Kenya's main objective for the 21st century is to transform itself into a newly industrializing country by the year 2020.<sup>1</sup> The eighth national development plan, for the 1997–2001 preparatory period, outlines strategies for laying the foundation of industrialization. Agriculture and industry are recognized as the twin engines that will propel the country towards the achievement of the above objective. A major challenge in this drive to industrialize the country is sustainable management of its resources for meeting the present and future needs of the society.

Biological resources are a source of raw material for agriculture as well as pharmaceutical and other industrial purposes. They are also the most significant component of Kenya's environment. To manage them carefully is, therefore, a priority for sustainable development and industrialization. Sustainable development principles incorporated into national development programmes aim to achieve the following:

- Enhance harmonization, implementation and enforcement of laws for the management, use and protection of the environment;
- Provide economic incentives to encourage the sustainable use of natural resources and the preservation of ecosystem integrity, and impose penalties for their misuse;
- Improve decision-making processes by developing efficient national environment education and information systems within easy reach of users in all parts of the country; and
- Enhance co-operation with regional and international environmental programmes, treaties, agreements and other such arrangements.

Indigenous people and local communities have a key role in the management, conservation and sustainable use of biological resources, even though this may not have been adequately recognised in the formal system of national economic planning. Local communities have relied on these resources to meet their daily needs for generations. In doing so they have continued to innovate and accumulate vast amounts of knowledge about sustainable utilization and conservation of biological resources. This has increased the value of genetic resources and has continued to provide motivation for conservation. The knowledge so generated has presented new economic benefits for modern society nationally and internationally. Recent developments in technology and the opening up of new markets for indigenous biological resources, as well as traditional knowledge and innovations (TKI), have increased the demand for these important resources.

Increasing population pressure, the poverty of indigenous people, and the demands of a materialistic culture, combined with lack of information and lack of adequate and effective regulatory and conservation measures, are threatening the continued existence of biodiversity. The influx of western culture during and since the colonial era has continued to frustrate and marginalize traditional practices despite their compatibility with the modern principles of conservation and sustainable use of genetic resources.

Many of the legal instruments used during the colonial era to further the economic interests of the colonial powers have remained in force. Even policies and legal and administrative measures instituted during the past three decades of the post-colonial era have never given adequate recognition to traditional practices. This legacy has resulted in continued theft (biopiracy) of the property of indigenous people as their knowledge becomes commercialized without adequate compensation to them.

## **Background and development of industrial property rights**

Prior to the enactment of the Kenya Industrial Property Act (Cap 509) of 1989, Kenya depended on the United Kingdom's Copyright, Design and Patent Act of 1988 in granting industrial property rights.

This system had several inherent shortcomings that made it incapable of addressing the development priorities of Kenya as a sovereign nation. A lack of examination procedures, the inaccessibility of the system to local innovators and a lack of recognition of some local innovations, in addition to other inadequacies, undermined technological development and the interests of Kenya as an independent nation.

The Kenya Industrial Property Act of 1989 was based on the need to promote domestic technology growth and stimulate domestic research and innovations. It repealed the Patent Registration Act (Cap 508) and established the Kenya Industrial Property Office (KIPO). KIPO was given the mandate to:

- Examine applications for industrial property rights and grant such rights
- Screen technology transfer agreements and licences
- Provide patent information to the public
- Promote inventiveness in Kenya
- Register trade marks and service marks

Under the Act, three categories of industrial property rights are recognized: patents, industrial designs and rationalisation and utility models.

Incidentally, when KIPO was being established, other international events in the field of intellectual property rights (IPR) were taking place, such as the signing of the Convention on Biological Diversity (CBD) in 1992. Due to their direct bearing on conservation, sustainable use and benefit sharing, IPR were included as part of the negotiations. The issue of IPR was soon to prove contentious, prompting the United States' refusal to sign the convention in Rio de Janeiro.

Another important international event was the conclusion of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) under the auspices of the General Agreement on Tariffs and Trade in 1994. Under TRIPS, an undertaking was made to globalize the standards of IPR protection, particularly those of developed countries. All members of the World Trade Organization are expected to adhere to the standards by the year 2005; developing and least developed countries were given periods of four and 10 years, respectively, to reach compliance. This has left the developing countries with no option but to amend their intellectual property laws to conform to the standards. Under Article 27, members shall provide protection for inventions in all fields of technology provided that these inventions are new, involve an inventive step and are have an industrial application.

It is in the spirit of keeping pace with the evolving world of IPR that Kenya is embarking on reviewing its IPR system to ensure conformity with related agreements and conventions.

Unfortunately, lack of clarity in ownership law and regulatory arrangements has persisted, presenting opportunities for firms, individuals and multinational corporations to continue bioprospecting.

## **IPR system in Kenya**

The current IPR system in Kenya does not recognize or protect the rights of indigenous people and local communities to their TKI. Consequently, bioprospecting has continued without indigenous people's benefiting fairly from the commercialization of their knowledge and innovations.

Under the current system in Kenya, seven categories of IPR are recognized: (i) trade marks and service marks, (ii) patents, (iii) utility models, (iv) industrial designs, (v) rationalization models, (vi) copyrights, and (vii) plant breeders' rights. The first five are administered by KIPO under two Acts of Parliament, the Kenya Industrial Property Act (Cap 509) and the Trade Marks Act (Cap 506), while plant breeders' rights are administered by the Kenya Plant Health Inspec-



tion Service (KEPHIS) under the Seed and Plant Varieties Act (Cap 326). The seventh category is administered under the Copy Rights Act (Cap 130) by the Attorney General's Chambers.

### **Patents**

A patent is a legal certificate that gives an inventor the exclusive right, for a fixed period (17 years in the Kenyan system), to prevent others from exploiting his or her invention for commercial gain without his or her authorization. Legal action can be taken against those who infringe the patent. Like other kinds of property, patents can be used as objects of trade – that is, can be sold, hired, licensed or inherited by succession. In order to acquire the rights to a patent, one has to lodge an application in the prescribed manner with KIPO. Usually the applicant may be an individual, a corporation or an institute. Once the application is received by KIPO, a thorough examination and search are done before the rights are granted and a certificate issued. A successful patent application must satisfy the examiner that the invention is:

- *novel* (i.e. was not available in the public domain before the application was filed);
- *non-obvious* in consideration of the prior art available at the time of filing the application (i.e. it would not have been easy for a person skilled in the art to make the invention; particularly critical is the level of human intervention in the existence of the invention); and
- *industrially applicable* (can be produced commercially or be used to produce commercial goods).

Certain inventions are specifically excluded from patentability. These include plant varieties as well as inventions potentially harmful to public order, morality, public health and safety, principles of humanity or environmental conservation. The Act also empowers the Minister to exclude certain inventions for short periods (e.g. 10 years), but these exclusions can be extended.

Once the rights have been granted, enforcement depends on the ability of the holder to identify violators and institute infringement proceedings against them.

### **Patents versus indigenous knowledge and innovations**

As has been stated in various national and international forums, TKI cannot be adequately protected under the present patent regimes. Recommendations from national and international forums have advocated the formulation of *sui generis* systems that will take into account the traditional practices of indigenous people. Despite the failures of current regimes to address the issue of ownership of indigenous knowledge and innovations, these regimes can still be used in some situations – for example, to contest the right of others to patent inventions whose substantive matter is already common knowledge of the indigenous people. However, this does not prevent the commercialization of the property of indigenous people without their being fairly compensated (see the following discussion of the *kiondo* case).

#### ***A domestic innovation becomes an article of international trade***

The origin of *the kiondo* basket (a traditional Kamba/Kikuyu community basket) is not known, but this innovation is believed to have originated in either the Kamba or Kikuyu community several generations ago. Initially the basket was made using fibres obtained from local biological resources. The skill of weaving the *kiondo* was passed down from mothers to daughters over several generations and was mainly a part-time occupation, with the output comprising only a small proportion of articles traded among these communities. The *kiondo* was a household item, used among other things for ferrying produce from farms to homesteads and marketplaces.

Effective penetration of this innovation into local and international markets in the early 1980s stirred some interest both locally and internationally. This turned what had been only a part-time occupation for some women in these communities into an almost full-time occupation, and a cottage industry started developing in response to the growing demand. Eventually, industrialists in developed countries, particularly Japan and Korea, mechanized the production

process and protected the innovation as a utility model. The impact of this move was soon felt by local traders who had ventured into international trade with this innovation, since, in terms of price, the industrially made product selling at US\$3 to US\$5 out-competes the handmade item selling at US\$8 to US\$10. This resulted in an outcry in the country about indigenous property being stolen. The State then realised that it was not possible to stake claims on the item, as, according to the intellectual property regime, the innovation was already in the public domain and not protected.

Over time the *kiondo* basket underwent several modifications from the original model with an open top made from fibres extracted from the bark of certain locally available shrubs to one made of sisal fibres with more elaborate lids and suspenders made of leather. The basket now comes in various colours, patterns and designs to satisfy market demands. Even though these new designs are eligible for protection under KIPO, none of the innovators has ever sought exclusive rights for any of the designs. This can be attributed to the innovators' lacking the necessary information.

Several problems arise in the use of the patent regimes in force for protecting traditional knowledge. These problems include:

1. Inability to formulate requests that meet the stringent requirements of patentability. It is important to note that the request determines the scope of the rights. Expertise in formulation of the request is required in order for a patent to be strong, successful and enforceable. Drawing up such a request is not within the capacity of most indigenous people.
2. Financial inability. Most indigenous people cannot afford the high fees required by patent offices, not to mention the cost that may be involved in enforcing the rights.
3. Lack of information. In order to identify infringements, one has to be vigilant. Because most indigenous people live in rural and marginalized areas where modern forms of communication are unavailable, they have no systematic way to find out that infringement has occurred. The problem is compounded by the lack of awareness and high level of illiteracy among indigenous people.
4. Low level of documentation of TKI. Examiners in patent offices depend heavily on documentation and literature in ascertaining the novelty of patent applications.
5. Most indigenous knowledge and innovation, particularly in the field of herbal medicine, may be patentable if modernised. Unfortunately, the technology to do so is unavailable to many indigenous peoples. Determining and describing the active components of herbal medicines in modern scientific terms makes them recognizable not only to patent offices but also to society in general, including the health and pharmaceutical sectors. However, the scientific knowledge and laboratory procedures needed to achieve this are beyond the reach of practitioners of traditional medicine.

### **Utility models**

"Utility model means any form, configurations or dispositions of some elements of some appliance, utensil, tool, electrical and electronic circuitry, instrument, handicraft mechanism or other object or any part of the same allowing better functioning, use, or manufacture of the item that gives some utility, advantage, environmental benefit, saving or technical effect not available in Kenya before and includes micro-organisms or other self-replicable material, herbal as well as nutritional formulations which give new effects".<sup>2</sup>

In the definition above, and in the provisions of the said Act regarding registration of utility models, an attempt was made to include under the present IPR system innovations (e.g. herbal medicine) that, despite deserving protection, cannot receive it under patents. Usually these utility-model protections are regarded as lower forms of protection, and the period of protection is shorter (five years in Kenya). Because the requirements for granting such protection are less stringent, requests for it are not subjected to as rigorous examination and search as requests for patents. Rights granted can, like those given with patents, also be traded.

Due to the basic similarities in procedures and requirements, those seeking utility-model rights for indigenous innovations face the same problems as patent seekers. During the formulation of the Act, it was presumed that all innovations could be disclosed in the same format

as patentable inventions. This has proved not to be the case, particularly with herbal medicines, since the manner and form in which they occur does not fit within the current system.

### **Trade marks**

“A trade mark is a mark used in relation to goods for the purpose of indicating a connection in the course of trade between the goods and some person having the right either as proprietor or as registered user of the mark”.<sup>3</sup>

In Kenya trade marks and service marks are registered under the Trade Mark Act (Cap 506), which is administered by KIPO. Numerous trade marks, mainly by multinational and other companies, are registered with this office. At the same time, in the local and international markets there are many products produced by the local communities through use of their traditional knowledge (TK), and, although these products sell very well, none of them bears a trade mark. This could be attributed to local inhabitants' lack of knowledge about trade marks, though it has to be said that the concept of a trade mark is not new, for since long before the colonial era, and even up to the present day, local communities (e.g. the Kamba people) have used marks on cattle, goats, and sheep to differentiate the herds of different clans within the community.

### **Industrial design**

“An industrial design means any composition of lines or colours or any three-dimensional form, whether or not associated with lines or colours that give a special appearance to a product of industry or handicraft and can serve as a pattern for a product of industry or handicraft” (KIPO, 2004).

There are many designs from traditional knowledge used in handicrafts. These industrial designs can be protected under the current IPR regime. The designs, most of which sell very well both in local and international markets, include wood and soft stone carvings of various wild animals, birds, local baskets and mats by various local communities in Kenya. Unfortunately none of these designs is protected, a fact that could be attributed to the innovators' general lack of knowledge about the protection process.

### **Geographical indications**

“Geographical indication in relation to goods or services means a description or presentation used to indicate the geographical origin, in the territory of a country, or a region or locality in that territory, where a given quality, reputation or other characteristics of goods or services are exclusively or essentially attributable to environment, including natural factors, human factors or both.”

The current IPR regime in African countries, including Kenya, has not put in place legal structures and instruments for protecting geographical indications, even though these countries have quality exports (e.g. coffee and tea) to the world market. Many products made by local communities have penetrated the world market (e.g. *kiondo* baskets and other local handicrafts), and this particular sector has offered many local people employment. These products sell very well internationally and earn a large amount of foreign exchange for Kenya, although without any indication of their geographical origin.

KIPO, however, drafted a Geographical Indications Bill in 2000, which is being distributed to various stakeholders for comments. This bill is expected to be introduced in parliament very soon.

### **Copyright**

The Copyright Act is administered under the Attorney General's Chambers and protects only the producer. This Act does not protect folk songs, which are community-based products. Some sections of folk songs have been produced using modern instruments. The producers

have registered these songs under their own copyright, and local communities get nothing in return for the use of their traditional songs.

### ***Trade secrets***

Herbalists keep their knowledge secret. At present there is no mechanism for protecting TKI in herbal medicine, and herbalists are particularly disadvantaged because trade secrets are not expressly provided for under Kenya's present IPR regime. Before the colonial era, local communities used to recognize their TK, practices and innovations, and members who came up with innovations, especially in the field of herbal medicine, were recognized and specially honoured by the elders.

### **Protection of plant varieties**

Kenya acceded to the International Convention for the Protection of New Varieties of Plants (the UPOV Convention) of 1978, and KEPHIS is charged with registering new plant varieties under the Seed and Plant Varieties Act (Cap 326) 1997. Through TK Kenya's local farmers and other indigenous people have over a long time developed their knowledge in collecting, selecting and breeding traditional crop varieties that are suited to the ecological zones they occupy. In addition to nutritional value, these breeds have always exhibited important traits such as drought and pest resistance. Most local farmers have little formal education, and, despite having developed new varieties for a long time, they are not in a position to describe their varieties so as to meet the registration criteria for new plant varieties (i.e. the variety has to be distinct, uniform and stable). The local farmers have, therefore, not applied to register their varieties. This has given modern agricultural researchers an opportunity to draw from these resources "novel" genes to enhance the performance of modern crop varieties. These varieties are registered under the ownership of the researchers, and the local farmer is unable to derive any benefit from the economic benefits arising from the sale of these new varieties.

It is important to note that the pharmaceutical, personal health care and food industries are continually getting exclusive rights to exploit the innovations of indigenous people. The latter are therefore unable to benefit from the very products and processes for which they provided the basis of development. Most of the robust biotechnology, personal care and pharmaceutical industries are located in the developed countries, and the highest proportion of the benefits accruing from the utilization of biological resources ends up in the north. As a consequence, the developing countries continue to miss out in terms of the uses that are derived from their biodiversity and from future potential markets.

Realizing that there was a lack of information in Kenya about the importance of IPR, KIPO launched an outreach program to create public awareness of the vital role played by the IPR system in the development of trade and industry. This program involves KIPO officers visiting industries, research institutes, universities, mass media and outlets to share information about IPR. It also involves organizing seminars and workshops with stakeholders. The program has had a big impact on the public, as evidenced by the large number of people already visiting the KIPO office to conduct searches and obtain IPR-related information.

Kenya has also established an information and documentation centre (IPDOC), which has a lot of technological information.

### **Value and importance of traditional knowledge.**

Despite having been marginalized and regarded as devilish, heathen witchcraft during the colonial era, traditional medicine has survived the test of time and proved its worth. It is believed that over 80 per cent of the African population depends on biological resources and the TK embodied in them to meet its health care needs. This is particularly true in communities living in marginal areas where access to modern health facilities is limited and western culture has not managed to totally disrupt the traditional culture and beliefs. In recent years Kenya has seen increased use of traditional medicine and increased visits to urban centres by herbalists. The growing use of traditional medicine can be associated with increasing poverty, deteriorat-

ing health facilities and the limitations of modern medicine in managing certain diseases. More often than not, modern Africans turn to traditional medicine when conventional medicine fails or is out of reach, and, surprisingly, to many the former has proved to be an appropriate alternative.

It is estimated that 20 to 25 per cent of human drugs produced in industrialized countries were derived from plants. A good proportion of these drugs are developed using leads provided by indigenous people. Not only are TKI important in pharmaceutical development, they have also played a major role in the development of agriculture, biotechnology and personal care products.

### ***Traditional methods of generating new knowledge and innovation***

Traditional methods of innovating and generating new knowledge are quite different from the modern science-based conventional methods. Traditional knowledge and innovations are usually cumulative and informal, more often than not being diffused into the general community without any commercial considerations. This is one reason why it is hard to assign private rights as advocated by the modern IPR systems.

### ***Adding value to traditional knowledge***

As we begin the third millennium, Kenya's economy continues to suffer from the burden of imported technologies for which hefty royalties have to be paid annually; yet a very low proportion of these technologies is effectively domesticated so as to contribute substantially to the advancement of the general technological base of the country. While this is happening, a vast amount of traditional knowledge and innovation has not been given adequate recognition in the economic planning, policy and law regimes. The present and possible future contribution of traditional knowledge and innovations remain unappreciated, particularly in the process of industrialization. It should be noted that some indigenous knowledge and innovation has turned out to be of great commercial and industrial importance, particularly in the developed countries.

### **Covering traditional knowledge and innovations with IPRs**

The present forms of IPR do not adequately protect TK against the onslaught of western culture. Due to the continued sharing of TK over the generations, it is already considered to be in the public domain; hence a good proportion of it may not be patentable. However, all is not lost, because the knowledge can be used to bar those attempting to obtain exclusive rights to innovations whose main component is traditional/indigenous knowledge. Unfortunately, indigenous people, due to their disadvantaged position, may not be able to use the present patent regimes this way, but states can make an inventory of this knowledge and help them. This inventory can be used by the patent office as a searchable database during patent examination. Amendments can also be made to the patent laws, in order to make them more sensitive to traditional/indigenous knowledge, by requiring that where an invention is derived from TK, adequate disclosure of the source be made in the application. Patents can be made registerable subject to deposition of a letter of consent from an authority recognized by the indigenous community (where the knowledge of the community is being patented) or the individual innovator (where an invention is derived from individual innovation).

A major issue that has never been effectively addressed is the extent of individual ownership of indigenous knowledge and innovations. There is no clear demarcation between what belongs to the general community, what to a specific community, and what to individuals within the communities. Certainly herbalists treat their knowledge as personal property, but some of the knowledge they possess is also available in the same form in the general community, due to the older tradition of sharing knowledge. If ownership is unclear, it is hard to determine how the benefits should be shared. The inventory proposed above can be used to determine individual rights and those of the general community.

The Organization of African Unity (OAU) has launched an initiative to address the issue of TK. It has organized several workshops for its members, and draft legislation addressing the issues of TK, farmers' rights and benefit sharing has already been distributed to all OAU members for comments.

## **Conclusion**

There is an urgent need to establish legal structures for the protection of traditional knowledge, practices and innovations, and also to make local communities aware of the importance of IPR systems, so that these communities can reap the benefits of IPR protection.

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## **Notes**

- <sup>1</sup> Sessional Paper No.2 of 1996 on Industrial Transformation by the year 2020. The paper presents policies that will lay the foundation for transforming Kenya into a Newly Industrialized Country (NIC) by the year 2020
- <sup>2</sup> The Industrial Property Act, 1989.
- <sup>3</sup> UK Trade Marks Act 1938



# THE PERUVIAN PROPOSAL FOR PROTECTING TRADITIONAL KNOWLEDGE

Ana María Pacón

## Characteristics of traditional knowledge

The knowledge of indigenous communities is a legacy from past generations to present and future generations. The present generations are administrators of such knowledge for their own benefit, and its custodians for future generations. The knowledge in question is collective in that it pertains to one or more indigenous communities. The individuals who form these communities are merely title holders vis-à-vis the knowledge, which is usually shared by different communities. Communities with similar ecosystems may have the same or similar knowledge, either because the communities have developed in a parallel manner or because there has been an exchange of knowledge between them. Whatever the case, in dealing with neighbouring communities, it is extremely difficult to determine precisely which community or communities are the rightful owners of a certain body of knowledge.

Furthermore, traditional knowledge (TK) is not static “stock” that is transferred unchanged from generation to generation; it may become richer with each generation when there are adequate incentives, or it may become poorer or even disappear. For instance, many traditional healing systems withered away with the advent of modern medicine.

In the law of some countries, TK is recognized as part of the cultural heritage of indigenous communities<sup>1</sup>. These communities have the right to a fair and equitable share of benefits arising from the use of their knowledge, and the right to make decisions regarding transactions involving such knowledge, and therefore to control access to it.

## What are the characteristics of the knowledge market?

A basic hypothesis of the perfect competition model is that complete information is available to all agents participating in the market. Supposedly, those who buy know what they are buying, and those who sell are fully aware of the value of what they are selling. However, in the market of knowledge, buyers do not know what they are buying, and sellers do not know the full value of what they are selling. Consequently, potential buyers are not always willing to pay what sellers claim is the true value of the goods, nor are sellers keen to disclose their wares lest these be taken away without any way of retrieving them should the value claimed by the buyers later be found to be too low. This characteristic of the market has led to demands for legal protection for all forms of knowledge, because in the absence of such protection the incentive for transferring and developing new community knowledge is lost. This is indeed a loss, for it is important for a community to build on its extant TK and to spread it among members. The usual forms of protection are not adequate for the communities' knowledge, whether because of its nature as collective property or possibly because much of it does not have direct and specific industrial uses. These concerns make it necessary to create a new system to protect the TK of the communities. In the absence of a protection regime, a lack of trust on the part of the communities has been detected by all those who wish to discuss their community knowledge with them. The communities are afraid of sharing their knowledge with outsiders because, once this knowledge is shared, they lose control over it and receive no benefit in exchange. Because the knowledge is not being developed and preserved by the communities, it is disappearing, possibly forever.

Until now it has been industry, not government, that has taken major steps to involve indigenous communities in further research based on this knowledge in order to derive benefits from it. However, the absence of a legal framework creates uncertainty for many companies interested in using this knowledge. As a result, the TK of communities is not being taken advantage of by society at large. An example is the use of acupuncture as a remedy for cases

where western medicine has not been able to offer relief. Here, TK complements contemporary western medicine. Yet the benefits that can be derived from using acupuncture to complement western medicine do not currently flow to the community that developed the technique, because there is no legal framework within which this can be achieved.

### **The need to implement a *sui generis* protection system**

Although the Convention on Biological Diversity acknowledges the rights of indigenous communities to their knowledge, there are no regulations to enforce the protection of these rights. The current modalities for this are patents and trade secrets.

#### ***Patents***

Patent law is based on the intrinsic requirement of novelty. It cannot therefore be used to protect commonly held community knowledge acquired and shared over several generations. It is next to impossible to call such knowledge novel, for one cannot say which part of it is novel. While one can argue that all the discrete components of the knowledge were novel when they were created, if one thinks of a holistic body of knowledge extant at a given point in time, none of it is novel. To further complicate matters, the application of this knowledge is customized, taking into account infinitesimal variations in the specific needs of the target beneficiary. In addition, it is very difficult, if not impossible, to unequivocally identify the “inventor”. In many cases the traditional healer (in common parlance, the witch doctor) is the one who has the requisite TK; in other cases the knowledge is spread throughout the community. In any case, it is undoubtedly the social group that created and maintains this knowledge, so that the seller cannot be a named individual, but must rather be a specific community.

Another key point is that patents confer only temporary protection. Once the term of protection expires, inventions are in the public domain and freely available. Given the unique characteristics of TK, including its transgenerational nature, not only present but also future generations should benefit from meaningful protection. The type of protection available under patents would lead to communal and intercommunal tensions arising from inexorable competition for the commercial benefits deriving from the knowledge. The use of patent law to protect community knowledge may, therefore, be ineffective. Finally, community knowledge cannot be used in an industrial manner, which is another requirement for protection to become available under patent law.

#### ***Trade secrets***

Under this modality, all information is protected against unauthorized acquisition or use by third parties. For effective use of this modality, information needs to be confidential. As the knowledge of the communities is diffused among various members of a community, it is difficult to gain protection through this method.

### **The Peruvian consultancy procedure**

In 1996, at the initiative of the Government of Peru, five consulting groups were formed to explore possible options for protecting and regulating TK and controlling access to genetic resources. Their tasks were to: (i) determine the forms of organization used by indigenous communities in Peru and the mechanisms they used for benefit sharing; (ii) inventory the genetic resources in Peru; (iii) regulate access to genetic resources; (iv) protect TK; (v) and develop pedagogical material; and a strategy for training indigenous communities.

Members included representatives of government,<sup>2</sup> non-governmental organizations (NGOs),<sup>3</sup> academia, and the indigenous communities.<sup>4</sup> Following an analysis of feasible approaches to protecting TK, it was decided that *sui generis* protection would be suitable.

Drafts were drawn up and discussed in workshops with indigenous communities in 1999. The first meeting was held in Lima (April 26–27, 1999) with the directors of the indigenous communities, and the second in Cuzco (May 10–12, 1999) with the directors and representa-

tives of groups of indigenous communities. In these workshops the concepts and basic definitions of the TK protection project, as well as the concept of intellectual property and how the underlying principles could be used as an instrument for the protection of indigenous knowledge, were explained, and the proposed protection regime presented. Finally, working groups were formed, and each working group was assigned a protection regime project. These projects covered the issues that, according to government authorities, were the most contentious and required input from the indigenous communities. At the end of the discussion a plenary meeting was held where each group presented its work and conclusions were drawn regarding the Protection Regime Project. The final conclusions reached were disseminated to all workshop participants.

Finally an international seminar (May 19–21, 1999) was organized by Indecopi and the World Intellectual Property Organization (WIPO) with participation by representatives of government, the private sector, NGOs, academia and the indigenous communities. Participants from other countries, in particular Brazil and other Andean countries<sup>5</sup>, also took part. Comments were invited from all participants and were discussed at length.

After these dialogues, Indecopi published the proposal in *El Peruano*, the national official newspaper of Peru, in October 1999<sup>6</sup> so as to disseminate it widely and invite comments from all interested parties. Through national<sup>7</sup> and international<sup>8</sup> workshops and seminars, it has been possible to publicize the proposal widely. In August 2000 a second proposal reflecting comments obtained to date was published in *El Peruano*.<sup>9</sup>

The Government continues to work closely with the indigenous communities and has successfully introduced a Law introducing a protection regime for the collective knowledge of indigenous peoples derived from biological resources.<sup>10</sup> Initially, brochures were prepared by a consultant to cover the main points of the Protection Regime Project. Two consultancy processes were initiated in October 2000: a pilot workshop with Amazonian students, and a workshop with indigenous representatives from all over the country. The main objective of Ministerio de Promoción de la Mujer y Desarrollo Humano ( PROMUDEH ) has been to have consultations at the national level.

The earlier consultation processes and dissemination activities relating to the Protection Regime Project reflect the efforts of the Government to address the actual needs and concerns of the indigenous communities. After national consultations, the project will be presented to the Congress for discussions and approval.

## The main points of the Peruvian proposal

- **Scope of protection:** The Peruvian proposal covers only TK associated with biodiversity. It does not cover other kinds of TK.
- **Objectives of the proposed regime** are to:
  - promote respect for and protection of TK;
  - preserve TK;
  - promote equitable benefit sharing; and
  - use TK for the benefit of humanity.
- **Possession versus Creation.** Protection is given to the indigenous communities in possession of TK, this being more important than knowing who the creators of this knowledge were. TK has existed among various indigenous communities for generations while constantly being added to, so it is not possible to determine who is the actual creator.
- **Title holding.** The rules and regulations of the proposal will apply only to collective knowledge. In cases where two or more communities possess specific knowledge, they will become co-holders.
- **Prior Informed Consent.** Buyers who wish to access the knowledge of a community must previously request the community's authorization and pay for this. In order to authorize access, indigenous communities must be given enough information about the purposes, risks and implications of the activity that is to be carried out. Authorization for research is different from authorization for exploitation. For the former, prior informed consent (PIC) is required; for the latter, in addition to PIC, a licensing agreement must be obtained.

- **TK in the public domain.** TK is considered to be in the public domain when it has been established that people not belonging to the indigenous community have acquired this knowledge through media sources (e.g. newspapers or television broadcasts) and perhaps personal contacts among the indigenous community.  
Once this knowledge has been diffused, even if unintentionally, it is considered to be in the public domain, so that its exploitation does not require either PIC or a licensing agreement. However, in return for its use, a contribution must be made to a special fund. Development options exist whereby the interested party and the community can come to an agreement regarding the sharing of any profits.
- **Duration of rights.** These rights are limitless because they are the property of the National Patrimony and will be passed on from generation to generation.
- **Register.** The Register is intended to preserve the knowledge of the communities. It is not public but confidential, and only those who have authorization from the communities can access it. The Register is not compulsory; it is a declaration as to what is regarded as a right. However, it brings about certain advantages: The patenting of TK declared in the register is only permitted upon application for and granting of authority from INDECOPI. It is also of assistance to potential bioprospectors in order to locate various sources.
- **Licensing agreement.** Since the communities are only custodians or administrators of the knowledge, their rights to this knowledge are inalienable. They can only be subject to an agreement licensing use.  
The agreement must stipulate the payment of royalties to the communities in return for the use of their knowledge.  
Although the knowledge may belong to more than one community, with sharing arrangements between communities it is sufficient to have an agreement with only one of the communities.  
The registration of the licensing agreement is discretionary, not obligatory.
- **Justifiable Compensation.** Two types of payments can be made to the communities. The first one occurs when the licensing agreement is entered into. This payment is obligatory and can take the form of money or goods (e.g. building schools, medical clinics, communication centres and so on). The second one occurs when some benefit has been obtained following the exploitation of the TK. The minimum payment is 0.5 per cent of gross sales.
- **Development Fund.** Given that a large part of the knowledge is shared by more than one community, and given that it is impossible for all of them to consent to the execution of the license to use the knowledge, a Development Fund should be created so that all the communities concerned can benefit. A committee has been formed by the communities and the Government to take decisions regarding the distribution of the benefits through a suitable mechanism such as the Development Fund.

## Relationship between TK and IPRs

The recognition and regulation of the rights of the communities concerning their knowledge does not in any way impede the obtaining of intellectual property rights as a result of the investigations carried out on the knowledge. The two systems of protection must be linked. For this reason, the Proposed Protection Regime<sup>11</sup> stipulates that if an invention has been developed based on the knowledge of an indigenous community, its patenting is not possible unless authorization for its use is given. A similar disposition regarding access to genetic resources can be found in the norms on access to Andean genetic resources (Decision 391)<sup>12</sup> and in the regulation project for Peruvian access.<sup>13</sup> At the same time, a norm with the same terms has been included in the new Andean Decision on IP.<sup>14</sup>

## Conclusion

In the absence of a protection regime, bioprospecting contracts executed by private companies, indigenous communities, and universities or other research centres have been regulating the use and distribution of the benefits resulting from the use of the genetic resources and

knowledge of indigenous communities. However, purely contractual agreements have the following shortcomings:

- Only the parties to the contracts benefit.
- Transaction costs for the parties are high.
- The communities are unaware of the legal regime in force.
- There is little community negotiation capacity.

The system of protection that is now to be implemented should establish clear rules to facilitate the conditions of the contracts, prevent abuses regarding these contracts and reduce transaction costs, so that both parties (sellers and buyers) can benefit from them. The protection system should not be so complicated and bureaucratic that it discourages potential users.

The particular characteristics of TK and genetic resources make regulation inconvenient. Work and analysis are being carried out at the Andean level and also in Bolivia and Colombia to introduce protection systems similar to the Peruvian proposal. At the regional level and within the framework of the Free Trade Area of the Americas, the Andean countries and Mercosur (Argentina, Brazil, Paraguay and Uruguay) requested that this subject be addressed by the Negotiating Group on Intellectual Property Rights.<sup>15</sup>

At the World Trade Organization's 1999 Ministerial Conference in Seattle, Peru submitted a proposal regarding TK and intellectual property within the framework of the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement).<sup>16</sup> This proposal had two stages: to execute the required studies and to introduce regulations. Since the Seattle meeting was a failure, there was no discussion of these proposals, which is unfortunate, since only when knowledge is protected at the multilateral level can it be said to be truly protected.

## Notes

- <sup>1</sup> Peru: The proposal outlined in this paper became the basis of the Law introducing a Protection Regime for the Collective Knowledge of Indigenous Peoples derived from Biological Resources, Law N°28711, August 2002; see also the Law on Preservation and Sustainable Use of Biological Diversity, Law N°26839, article 24; also see the Brazilian Draft Law N°4579 of 1998, article 46. Costa Rica: Law of Biodiversity, Law N°7788 of May 1998, article 66.
- <sup>2</sup> Instituto Nacional de Defensa de la Competencia y de la Protección de la Propiedad Intelectual (INDECOPI), Ministerio de Industria, Turismo, Integración y Negociaciones Comerciales Internacionales (MITINCI), Ministerio de Promoción de la Mujer y del Desarrollo Humano (PROMUDEH), Instituto Nacional de Recursos Naturales (INRENA).
- <sup>3</sup> Sociedad Peruana de Derecho Ambiental (SPDA), Centro de Estudio y Promoción del Desarrollo (DESCO).
- <sup>4</sup> CONAP, Asociación Interétnica de la Selva Peruana (AIDSESEP).
- <sup>5</sup> Colombia, Ecuador, Peru, Bolivia and Chile
- <sup>6</sup> *El Peruano*, October 21, 1999, 179492 et seq., <http://www.indecopi.gob.pe>.
- <sup>7</sup> "Reunión de Trabajo sobre la participación de los pueblos indígenas en el proceso de desarrollo de legislación sobre protección de sus conocimientos colectivos y acceso a los recursos genéticos," organized by the Secretaría Técnica de Asuntos Indígenas of PROMUDEH (October 26, 1999); "Consulta a los Pueblos Aymaras, Quechuas y Amazonicas sobre conocimientos indígenas y recursos genéticos" organized by the Organización de Comunidades Aymara, Amazonenses y Quechuas (OBAAQ), sponsored by the Comisión Jurídica para el Autodesarrollo de los Pueblos Originarios Andinos (CAPAJ) and the Asociación de Defensa y Desarrollo de las Comunidades Andinas del Peru (ADECAP) (January 15, 2000), "Taller Comunal sobre la Propuesta de Régimen de Protección de los Conocimientos Colectivos de los Pueblos Indígenas y Acceso a los Recursos Genéticos" organized by the Organización de Asociación ANDES, held in Cuyo Grande, Cusco (February 19, 2000).
- <sup>8</sup> "Roundtable on Intellectual Property and Traditional Knowledge" organized by WIPO in Geneva (November 1–2, 1999); Consultation organized by Peoples' Biodiversity Network (IPBN) in the framework of the "Primera Reunion del Grupo de Trabajo especial de composición abierta del periodo entre sesiones sobre el artículo 8 j) y disposiciones conexas del Convenio sobre la Diversidad Biológica" in Seville (March 28, 2000); Consultation on "Strategies and Instruments for Protecting the Traditional Knowledge of Indigenous and Local Communities, in the frame of the workshop on Instruments for Access and Benefit Sharing from Genetic Resources and Related Traditional Knowledge Issues, co-organized by the Indigenous Peoples' Biodiversity Network (IPBN) and the World



Resources Institutes (WRI) as part of the Global Biodiversity Forum 15 in Nairobi (May 13, 2000); “Reunión de la OMPI para países andinos sobre el uso de los sistemas de propiedad intelectual para la protección de los conocimientos tradicionales y el folclore”, Bolivia (October 19–20, 2000); Twelfth Ringberg Symposium “Indigenous and Traditional Resources”, Ringberg, Germany (November 22–25, 2000), Max Planck Institut.

<sup>9</sup> *El Peruano*, October 21, 1999. Also visit: <http://www.indecopi.gob.pe>

<sup>10</sup> Law 27811 of 10 August 2002

<sup>11</sup> Now Law N° 27811, Introducing a Protection Regime For The Collective Knowledge of Indigenous Peoples Derived from Biological Resources.

<sup>12</sup> Second Complementary Disposition.

<sup>13</sup> First Complementary Disposition.

<sup>14</sup> Decision 486 of September 14, 2000, Gaceta Oficial del Acuerdo de Cartagena of September 19, 2000, No. 600. Art. 29-i), Art. 75-h).

<sup>15</sup> Doc. FTAA.ngip/w/47 of December 13, 2000.

<sup>16</sup> Doc. WT/GC/W/362 of October 12, 1999.



# PROTECTION OF TRADITIONAL ARTISANAL CRAFTS IN PANAMA

Beleida Espino R.

## Traditional knowledge: artisan crafts

Traditional handicrafts of Panama are produced by two distinct ethnic groups: indigenous, pre-Hispanic communities; and the *mestizos* who evolved as a result of the fusion of Spanish, indigenous, and people of African racial descent. The handicrafts of the local communities have been significantly influenced by Spanish culture, which dominated during colonization, as well as by the culture of the people of African racial descent who were brought by the Spaniards to perform hard labour. With this intermingling of cultures, the indigenous peoples of the country learned new artisanal crafts and produced a hybrid art form, in a process that Marcela Camargo has identified as *acculturation*. In Panama the mixing of cultures has led to the development of a unique identity.

The traditional crafts of local communities are part of the national folklore and include ornamental and/or utilitarian crafts, crafts that can be used for commercial gain, service crafts, and other crafts.

Use of traditional crafts leads to the manufacture of artisanal objects with a cultural, local, or regional connotation. These are anonymously manufactured from art forms that have endured the test of time and has been transmitted from generation to generation. The objects have pre-colonial roots and when marketed provide income to the families that produce them.

## The role of traditional crafts in the national economy.

When artisanal skills are used to create products for economic gain, the production process becomes a micro-industry and tends to lose the important socio-cultural aspects that are derived from the traditional knowledge of generations.

In Panama, the livelihood of about 250,000 people depends on the production of around 100,000 artisanal products. By law, an artisanal sector is comprised of a maximum of five workers without any limit on the amount of capital used. Owing to the labour-intensive nature of the production units, the workforce employed in this sector generates a high degree of added value. The artisanal sector also makes a significant contribution to the gross national product (GNP) of the country and provides income to the indigenous population. For a significant section of the community involved in this type of work, such activity generates a large proportion of its income; however, because of the dynamics of their subsistence economy, it cannot satisfy all their needs.

## Legal framework for the promotion and development of crafts in Panama.

Panama has an extensive legal framework for the protection of its traditional crafts. The Constitution of the Republic, in Article 77, specifies that "The national culture encompasses artistic, philosophical, and scientific manifestations made, through the ages, by humankind in Panama. The State will promote and safeguard this cultural heritage". Complying with the directives of the Constitution, various government institutions are working to develop, promote, and protect artisan crafts.

The first known legislation to cover crafts in Panama is Act 21 of January 30, 1967, which restricts imports of certain articles that are used as substitutes for, imitate, or compete with native artisanal products. The law lists these products in detail.

Act 26 of October 22, 1984, prohibits the import of reproductions of *mola* textiles, engravings that imitate *mola* textiles, *mola* imitations, or any other textiles or articles that in one way or another imitate or tend to compete with the crafts of the Kuna people known as "*mola*."

Act 4 of January 28, 1988, promotes “teaching of traditional folkloric expressions” in the schools of the country.

Act 11 of December 6, 1988, stipulates that “certain measures” may be taken to “protect national composers, interpreters, and musicians”.

Act 8 of June 14, 1994, promotes “tourist activities” in Panama. This law states, in one of its articles, that the “State will regard Indigenous *Comarcas* as tourist promotion areas and will promote the folklore of the Indigenous and peasant culture and tradition”.

Act 25 of August 26, 1994, regulates industrial exploitation and commerce. It states that the maximum number of workers for a unit in the artisan sector is five; it likewise stipulates that these units are not required to obtain commercial or industrial licenses.

Act 15 of August 8, 1994, protects the authors’ copyright “over their literary, instructive, scientific, and artistic work, whatever may be their nature, form of expression, merit, or destiny”. It defines applied works of art as “artistic creations with utilitarian functions or which are incorporated in a useful article, be it an artisan craft or produced industrially”.

Act 35 of May 10, 1996, includes provisions related to “industrial property”. The objective of the law is to protect inventions, models of exploitation, industrial drawings and models, industrial and trade secrets, brands of products and services, collective trademarks and guarantees, indications of origin, certificates of origin, trademarks, and public expressions and signs. It provides that the *Dirección General del Registro de la Propiedad Industrial* (DIGERPI) of the Ministry of Commerce and Industries will be responsible for enforcing this Law.

The chapter on brand and trademark legislation establishes that any association of producers, manufactures, traders, or service providers or any not-for-profit association may request the copyright for collective brands in order to distinguish the products or services of its members from the products or services of those that are not members of the association that is applying for copyright.

Act 27 of July 30, 1997, covers “artisan protection, promotion, and development”. The objective is to promote artisanal activity in the Republic of Panama by establishing special promotion, protection, development, and marketing conditions.

The Ministry of Commerce and Industry, through the Directorate of National Artisan Crafts, is the entity responsible for enforcement of the law and for coordinating all the activities that must be carried out as established by law. For purposes of preserving national traditions and cultures, the import of finished or unfinished artisanal products, that imitates Panamanian traditional and indigenous dress and articles, such as *polleras* (typical skirts), *molas*, *naguas* (*naun*), and *montunos*, is prohibited.

Act 20 of June 26, 2000, establishes a “special intellectual property system for the collective rights of Indigenous peoples, for the protection and defense of their cultural identity and of their traditional knowledge”. The purpose of this law is to protect the collective rights of the indigenous people over their creations, such as inventions, models, drawings, and designs, and innovations contained in images, figures, and symbols, in addition to the cultural elements of their traditional artistic expressions, history, music, and art, which can be commercially exploited through a special register system.

The principle embodied in this law is unique. When formulating this law, Panama was advised by the World Intellectual Property Organization (WIPO) that there was “no model Law nor International Treaty that includes recommendations on the best way to protect traditional knowledge”. The decision was therefore made to create this law from scratch without basing it on any model.

In designing the project to formulate law to safeguard a special intellectual property system for the collective rights of indigenous people, the economic, social, and ethnic aspects that would be affected or influenced by this legislation were considered.

Firm and positive steps will be taken to establish a solid system for the protection and actual registration of the collective rights of indigenous people, without ignoring the rights of other sectors of the population that received benefits prior to this bill. Initiation of these steps was

indicated by the disclosure of intention of the Commission of Indigenous Affairs in presenting the project.

The new law acknowledges and pays tribute to the traditional knowledge of indigenous people, which has been transmitted from generation to generation.

## **Legal Instruments**

Act 20 creates within the Industrial Property Department the Collective Rights and Folkloric Expressions Division, which will handle, among other things, registration of the collective rights of indigenous people and local communities. The overall goal of this division is to coordinate, develop, advise on, and register, in general terms, the activities of the target communities in order to protect the collective rights of holders of traditional knowledge and folkloric expressions.

For this goal to be achieved, the following steps need to be taken:

- Examination of the applications presented in order to register collective indigenous rights and folkloric expressions.
- Creation of a manual and computerized archives of traditional knowledge and folkloric expressions, according to the country's preference, that will include registers, data, publications, oral transmissions, and traditional practices, among others.
- Creation of a regulated typology of collective rights and folkloric expressions.
- Enforcement of existing laws referring to the intellectual protection of the collective rights of traditional knowledge and folkloric expressions and promotion of the creation of new laws on this issue.
- Promotion of the programme to protect the intellectual rights of folkloric expressions and collective rights.
- Provision of technical support and training in the field of intellectual property to traditional knowledge and folkloric expressions of the people holding this knowledge.
- Coordination with organizations and national and international institutions responsible for developing programs for protecting the intellectual property inherent in traditional knowledge and folkloric expressions.
- Promotion of close collaboration between Panama and other countries to ensure that the financial rights derived from the Register of Collective Rights resulting, from protecting traditional knowledge and folkloric expressions, are recognized at the international level.



# THE PROTECTION OF TRADITIONAL KNOWLEDGE IN BANGLADESH

Farid Uddin Ahmed

## Geographical and meteorological background

Bangladesh is mostly low and flat, with hilly areas restricted to the northeast and southeast. Higher land is scattered in the north and northeast (FAO 1988a). The total land area of the country is about 14.75 million hectares, of which 12.98 million hectares (88 per cent) is dry land surface, while 1.77 million hectares (12 per cent) is covered by rivers and other inland bodies of water. 65.3 per cent of dry land is used in agriculture, 15.19 per cent is in government-owned forests, and 0.76 per cent is in tea gardens. Housing and settlements use 4.38 per cent, while other cultivable and uncultivable areas (waste lands) comprise 2.37 per cent. Floodplains account for about 80 per cent of the land and hills for 12 per cent; terraces occupy 8 per cent of the country (Brammer 1990).

The country enjoys a subtropical monsoon climate with a distinct dry season. The mean annual rainfall varies from 1,250 millimetres in the extreme west to 6,000 millimetres in the northeastern corner of the country. In much of the country, the mean annual rainfall is in the range of 1,500–3,000 millimetres. While there are six seasons in the year, the most prominent ones are winter, summer and the monsoon season. In the winter (November–February) the temperature varies from 5 to 23°C; in the summer (March–June) the temperature can go as high as 40°C. The monsoon season starts in July and persists until October, accounting for 80 per cent of the total rainfall (FAO 1988b).

## Modernization of agriculture and its consequences

At current prices, agriculture contributes 30 per cent of the gross domestic product (GDP). It provides more than 65 per cent of employment and accounts for roughly 32 per cent of export earnings. The crop sector accounts for 73 per cent of agricultural output, followed by fisheries (9.9 per cent), livestock (9.6 per cent), and forestry (7.4 per cent).

The country's agricultural scenario has changed rapidly in the past 25 years. Rice production has nearly doubled (from 10 to 19 million tons), taking the country to the verge of self-sufficiency in food grains. This achievement results from a substantial intensification of farming: modern rice varieties now account for 55 per cent of the harvested rice area, and the cropping intensity has risen from 143 per cent to 180 per cent. National indicators of health, literacy and life expectancy at birth have all improved, and the proportion of people living in poverty has declined.

With the introduction of modern varieties of rice, though productivity has increased manifold, problems have also begun to emerge. These include loss of soil fertility, low organic matter content in the soil (more than 60 per cent of the soil has less than 1.5 per cent of organic matter), low levels of nitrogen in almost all soil types, and deficiency in phosphorus, zinc, sulphur, boron and other substances.

Nutrient imbalances are a major problem resulting from improper use of chemical fertilizers. The fertilizers applied to the soil are far below the recommended dose, particularly the phosphorus and potassium ones. In some cases, excessive nitrogen is applied. This has led to nutritional imbalances as well as acute depletion of nutrients in the soil, particularly in intensively cultivated areas. The annual rate of depletion is estimated at 250 kg/hectare, while only 100 kg/hectare is returned to the soil in the form of added fertilizers.

Sedimentation caused by upstream deforestation, inappropriate cultivation practices and low organic matter content in the soil contributes to soil erosion, which in turn leads to sedimentation in downstream rivers, lakes and other bodies of water. This results in flash floods and reduced soil productivity.

Genetic erosion resulting from the introduction of modern varieties of crops is now a serious problem in agriculture. The country has been the abode of some 5,000 species of higher plants (angiosperms). In the early 1960s there were some 8,500 cultivars of rice alone; their numbers have now been reduced to only a few dozen.

### **The importance and scope of traditional knowledge in Bangladesh**

Bangladesh is predominantly a rural country, with agriculture the mainstay of the economy. The majority of the population is either directly or indirectly connected to agriculture. In this agrarian society, farmers have relied on indigenous knowledge for centuries, organizing production on the basis of local knowledge transmitted from previous generations and building on this knowledge by modifying and refining it to suit prevailing circumstances. Farmers grow and retain traditional cultivars mainly for the following reasons:

- unavailability of improved varieties and/or their seeds
- traditional varieties' low input requirements
- their adaptability to specific ecological niches (e.g. deep-water rice, salinity-tolerant varieties of crops)
- their resistance to pests
- their specific qualities (e.g. finer grain or aroma, specific flavours)

It is important to note that traditional varieties suit subsistence farming, which is still the backbone of agriculture in Bangladesh.

Today farmers are exposed to modern farming knowledge, but they have not abandoned their traditional knowledge (TK). This is also true of other traditional occupational groups such as carpenters, potters, weavers, blacksmiths, herbal practitioners and fishermen. These groups draw on the local heritage of everyday knowledge when producing their goods and products.

We can no longer afford to ignore the value of TK by continuing to view the knowledge and practices of local people as “primitive”, “unscientific” and a hindrance to development. If we do so, the goal of achieving sustainable development in the country's many sectors may remain unrealized. Planners, policy makers, and development practitioners must try to understand the TK and practices of the communities in which they are working. Through such understanding, they can help better integrate local knowledge with modern scientific knowledge, and in doing so help launch development initiatives that are environmentally and socially sound.

Recent strategy documents for environmental management and agricultural extension indicate that the Government of Bangladesh is increasingly emphasizing TK, particularly as it relates to natural resource management. NEMAP (1995) recommended that actions on land resources integrate indigenous land use practices and “farmers' own indigenous knowledge, which is often environmentally sustainable, and efforts ... be made to support and learn from farmers as well as from the formal research system”. It recognized that farmers actively engage in experimentation as part of their daily work.

The relatively small resources required by TK research will yield a large dividend in improving the conditions of the poor. There is no reason for scientists to feel threatened; this research will neither take away resources from their valuable research nor undermine it. On the contrary, it will contribute to enriching and improving it.

### **The estimated economic value of traditional knowledge in agriculture and other areas**

The quantitative value of TK use in Bangladesh has not been studied. Studies conducted thus far on TK involve documentation of knowledge systems in crops, forestry, fisheries and livestock (Sillitoe 2000, Khan and Sen 2000). Haque (2000) made a qualitative assessment of losses caused by the hydroelectricity project in Kaptai, resettlement in the Chittagong Hill Tracts, the Forest Development Project, water logging in Beel Dakatia, the Narayangonj-Narshingdi Irrigation Project, and shrimp cultivation in Chakaria and the Sunderbans. Similarly, Rahman et al. (2000) recorded TK of plants used by the tribal community in the hills and



identified 30 plant species being used for medicinal purposes. Others have recorded uses of TK, but no one has ventured to quantify its value.

### **Existing and envisaged systems for the protection of traditional knowledge**

The idea of protecting TK is recent. With the implementation of the Convention on Biological Diversity (CBD), the government of Bangladesh has initiated the drafting of a legal instrument to conserve biodiversity and community knowledge and to protect new plant varieties developed by the public and private sectors.

A draft list of plant genetic resources has already been prepared. It includes the local and scientific names of species, as well as the species' attributes, habitats, status (exotic or indigenous) and uses (Khan and Ahmed 2000). The Bangladesh Academy of Agriculture (1997) documented 100 useful indigenous agricultural technologies that encompass crops, forestry, fisheries and livestock. There are other publications that document hundreds of other technologies related to TK. These technologies and farmers' practices will be further refined, verified and covered under sui generis systems.

Farmers have been growing and retaining cultivars for ages. So far there is no legal instrument in force to protect these cultivars or knowledge concerning them.

### **The role of customary law in protecting TK and regulating its transfer**

There is no system in operation for protection of intellectual property rights over plant and animal genetic materials, although patents are granted in case of inventions relating to industrial microbiology. There is a council for industrial research (the Bangladesh Council of Scientific and Industrial Research), which generates industrial technologies. It has patented microbes as part of its work. Citric acid fermentation and production of baker's yeast from molasses (Feroza 2000) are two industrial microbial technologies patented by the organization under patent law.

### **Conservation of genetic resources by agricultural research institutes**

Agricultural research institutes (ARIs) are involved in the collection and conservation of genetic material. There are three gene banks with limited facilities in three ARIs: the Bangladesh Agricultural Research Institute, which conserves genetic material for crops other than rice and jute; the Bangladesh Rice Research Institute, which conserves genetic material for rice; and the Bangladesh Jute Research Institute, which conserves genetic materials relating to jute. The lists of genetic resources conserved in those gene banks are documented among the plant genetic resources of Bangladesh (Khan and Ahmed 2000). Other ARIs are also involved in in-situ conservation.

#### ***Activities of NGOs in genetic conservation***

Among nongovernmental organizations (NGOs), UBINIG, the Bangladesh Seed Foundation, and BARCIK are noteworthy for genetic conservation and documentation. UBINIG is involved in community gene banks, with special emphasis on the involvement of women. They conserve mainly traditional varieties of crops and practice organic farming.

The Bangladesh Seed Foundation performs similar activities. Participants conserve seeds voluntarily. BARCIK is involved in documentation of TK.

#### ***National committee on plant genetic resources***

Recognizing the need to conserve traditional varieties and knowledge, and in response to the requirements of the TRIPS Agreement and the CBD, the government of Bangladesh has organized a National Committee on Plant Genetic Resources to identify national genetic resources and draft related acts to conserve biodiversity and community knowledge and protect new plant varieties. In 1997 the committee organized a national workshop with participation by representatives from related national and international bodies and recorded the status of plant

genetic resources in the country (Hossain et al., 1997). The workshop recommended drafting acts for the protection of biodiversity and community knowledge and new plant varieties. Two draft acts have been prepared and are in the process of approval by the appropriate authority. Following are the salient features of the acts with respect to preserving biodiversity and protecting community knowledge.

### **Biodiversity and Community Knowledge Protection Act**

The main objective of the Biodiversity and Community Knowledge Protection Act is to protect the sovereign rights of communities that have knowledge of biodiversity and have managed, maintained, conserved, reproduced and enhanced biodiversity, genetic resources and TK, culture and various forms of practice related to these resources. The Act also seeks to create the necessary legal and institutional environment for achieving this objective.

The Act specifically seeks to:

- ensure the conservation and sustainable use of biological and genetic resources and related knowledge, culture and practice in order to maintain and improve their diversity as a means of sustaining the life support and healthcare system of the people of Bangladesh;
- protect biological and genetic resources and the related knowledge, culture and practice from pollution, destruction and erosion;
- protect and support the rights, knowledge, innovations and practices of local and indigenous communities and national scientific and research institutions with respect to the conservation, use and management of biological and genetic resources;
- provide an appropriate system of access to biological and genetic resources and related knowledge based on the prior informed consent of the concerned local or indigenous communities and the state;
- promote appropriate mechanisms for a fair and equitable sharing of benefits arising from the use of biological and genetic resources and related knowledge and technologies;
- ensure the participation and agreement of concerned communities in making decisions regarding the distribution of benefits that may derive from the use of biological and genetic resources;
- promote and encourage the building of national scientific and technological capacity relevant to the conservation and sustainable utilization of biological and genetic resources;
- promote new innovations and discoveries to reproduce, manage and enhance biodiversity and genetic resources;
- ensure that the transfer and movement of biological resources and the community's knowledge take place in a transparent manner and in accordance with the Act; and
- protect the biological and ecological environment of the country from all pollution, particularly from the potential hazards of biological pollution caused by the release of genetically modified organisms in the environment or the use of genetic engineering technology.

### **General provisions of the Act**

The proposed Act covers all biological and genetic resources and related knowledge as well as their derivatives, both in situ and ex situ, within the jurisdiction of the country. It covers all varieties of life forms including plants, animals, fish and aquatic life forms and microorganisms belonging to all genera/species and varieties, wild or cultivated, whether occurring naturally or modified in any manner whatsoever through any process, and their cell lines, genetic material, characteristics and traits, as well as products derived from them and the processes involved therein.

The people of Bangladesh are composed of diverse communities and localities, diverse cultures and diverse lifestyles situated in various ecosystems. This diversity has evolved in line with the biodiversity, associated TK and cultural practices of the country. The Act provides legal protection to safeguard these diverse indigenous lifestyles and livelihood practices from degeneration, erosion and/or destruction. Access to and use of biological and genetic resources is to be guided by these values.

The Act is designed as an instrument enabling the people of Bangladesh to exercise their sovereign and inalienable rights, formal and/or informal, over their biological and genetic resources and related intellectual and cultural knowledge. These rights shall be exercised either through traditional and customary laws, practices, values, moral institutions, community arrangements, and institutions or through various laws and regulations of the state, including the new provisions brought into force under the Act.

The Act prohibits violation of common property regimes that include various rights, relations, arrangements and cultural practices, whether or not these have legal expressions or recognition through legal precedents by which communities own, use and have access to biological and genetic resources. The Act will ensure that no citizen of Bangladesh is prohibited from accessing and using biological and genetic resources and the related knowledge, intellectual practice and culture, as long as such access and use do not fall outside the society's cultural, traditional, and customary practices and/or do not constitute activity for economic profit.

It is recognized that the life-supporting and life-affirming systems of the people of Bangladesh are a matter of national security. These systems are traditionally based on biological diversity and ensure availability of food, fiber, medicine, energy, construction materials and other vital necessities. They also provide nutritional and ecological security and conserve the environment, knowledge and culture of the country, which are so important for the survival of its inhabitants. Consequently, any development and other activity shall be prohibited and/or deemed illegal if it erodes, destroys or becomes detrimental to the biological and genetic basis of national security.

The Act protects, develops and strengthens the integrated, interconnected and unique feature of biodiversity-based agriculture of Bangladesh, which is holistic in spirit and practice and includes fisheries, animal husbandry, poultry raising, forestry and various domesticated and undomesticated plants, animals, birds, fish, microbes and other life forms.

The Act is the legal basis for protecting the biodiversity of genera and species, of all life forms in general, and of particular forms pertaining to plants, animals, insects, microbes, fish, birds or other creatures living in forests, wetlands, marine environments, rivers and other ecosystems. It promotes and supports different ways of generating knowledge and technology in various forms and contents by giving priority to material and cultural development in order to help the people of Bangladesh achieve greater happiness and a higher standard of living.

The Act protects and encourages the ingenuity of the various communities in the national interest as well as for the common good of humanity, particularly the innovations of primary food producers such as farming and fishing communities and communities living in forests.

The Act recognizes a "community", a "local community" or an "indigenous community" as a legal person with the inalienable rights inscribed in the Act.

The Act prohibits all forms of monopolization of biological and genetic resources and related knowledge and culture. Through it, the state is committed, in case of legal conflicts, to upholding the common property regimes against any private claim to the biological and genetic resources and the intellectual and cultural knowledge and practices related to these resources.

## **The New Plant Varieties Act**

The main objectives of the New Plant Varieties Act are to:

- allow legal protection of commercial plant varieties in Bangladesh;
- provide incentives to private-sector breeders to invest in the development of commercial plant varieties in Bangladesh;
- provide the relevant ministries and universities in Bangladesh with a legal mechanism for controlling the use of commercial plant varieties developed by them and for claim benefit sharing for these varieties, as appropriate;
- fulfill the commitment of the Government of Bangladesh under Article 27-3(b) of the World Trade Organization's TRIPS Agreement;

- provide for awards recognizing the contribution of new plant varieties that may supplement or replace commercial incentives; and
- allow for legal protection of communities as:
  - owners, users, custodians, and stewards of plant varieties held in common;
  - residual title holders as stipulated in the Biodiversity and Community Knowledge Protection Act; and
  - farming communities with farmers' rights.

The Bangladesh Plant Variety Rights Authority (PVRA) is the proposed executing agency of the Act and has the authority to grant a New Plant Variety Certificate as well as Citations of Recognition and Awards. PVRA is the administrative body for the Act and has the right and responsibility to grant New Plant Variety Certificates and for establishing rules and regulations for examining and granting these certificates. It is also responsible for arranging regional cooperation for examination of plant varieties and for exchanging information relevant to plant variety rights; determining procedures for operationalizing farmers' rights; and establishing and managing the Plant Variety Development Fund.

The Plant Variety Rights Authority is to consist of officials from relevant ministries and agencies and be chaired by a person of eminence in agriculture.

Within 10 years from the commencement of the Act, all plant genera and species will be entitled to variety protection.

## **The National Biodiversity Authority**

A National Biodiversity Authority is to be created as a regulatory body at the highest level to ensure proper implementation and enforcement of the provisions of the new Plant Varieties Protection Act. It will function as an independent and autonomous body composed of relevant representatives from the public sector, scientific and professional organizations, women's organizations, development and environmental organizations, and representatives of local and indigenous communities. It will include representatives of related National Agricultural Research System institutes, a Member of Parliament and six members representing different communities. The Authority will also be the implementing agency of the New Plant Varieties Act as well as other acts related to biodiversity and innovation in other areas.

All genetic resources should be identified and registered with the Authority. Local government will be involved in all steps of registration. Thus, if there is any exchange, communities will be informed of the process. The Authority may approve the granting of access to the material requested with or without conditions. As soon as an application is granted, an agreement is to be signed between the collector and the Authority on behalf of the community/communities involved and the state.

### ***Access and benefit sharing***

Access to biological and genetic resources shall be given only to individuals, communities, research institutes, or any other public or private organizations involved in improvement of varieties. Collector(s) must provide a written commitment that all research reports and results associated with specimens collected from Bangladesh will be provided to the National Biodiversity Authority and the concerned communities.

Any benefits accruing from the commercial utilization of genetic materials should be equitably shared. Limits will be set on the sizes of specimens that collectors may obtain and/or export, based on the status of the species in question.

### ***Access and collection for commercial purposes***

Access and collection for commercial purposes and bio-prospecting activities with commerce as their direct or indirect purpose will have to meet all the requirements of general provisions for access and collection.

The collector will have to agree that any damage that may be caused knowingly or unknowingly by the commercial activity or activities will be compensated by the collector to the Na-

tional Biodiversity Authority or to the affected community, as decided and directed by the Authority. The collector will have to pay a fee for commercial collection to be decided by the National Biodiversity Authority.

In addition to fair and equitable benefit sharing in terms of technology transfer and the sharing of knowledge and scientific skills, at least 50 per cent of the commercial profit generated by such activities will have to be shared with the communities concerned.

## **Future activities**

### ***Establishment of a National Institute of Plant Genetic Resources***

Bangladesh has given high priority to conservation and utilization of genetic resources. A National Institute on Plant Genetic Resources is being established that will be responsible for exploration of genetic resources as well as their collection, characterization, evaluation, conservation, utilization and documentation. It will also oversee exchanges and training to create awareness among stakeholders and end-users.

Though the institute will initially focus only on plant genetic resources, eventually it will cover activities related to animals and will then be converted into a National Institute for Biodiversity.

Although the institute is being launched with local resources, it will need foreign assistance in the form of technical assistance in the evaluation and utilization of genetic resources. There is a great shortage of trained personnel in the various disciplines covered by the institute. An effort will need to be made to develop human resources for the conservation and utilization of genetic resources.

As was mentioned earlier, Bangladesh is developing legal instruments to protect its biodiversity and TK. Extensive support for implementation of the legal instruments, establishment of the national institute and technical help in the form of expatriate consultants, human resource development and equipment will be needed to protect the country's biodiversity and traditional knowledge.

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# THE PROTECTION OF TRADITIONAL KNOWLEDGE IN INDONESIA

Sulaeman Kamil

## Introduction

Before the year 2000, most members of the intellectual community in developing countries did not pay attention to the prevailing intellectual property rights (IPR) system. Scientists, engineers and the industrial community have incorrect perceptions about IPR. For instance, intellectuals generally believe that the patent system lies within the purview of the legal community only and that inventions must necessarily constitute high technology. Registering a patent is complicated, expensive and time-consuming. Scientists in developing countries are keen to produce scientific publications but neglect to patent products and processes embedded in, or directly derivable from, their research. Since scientific publications are protected under copyright law and there is no need to register further, scientists and engineers may be tempted to ignore IPR regulations.

## What is a patent?

The patent system can be regarded as an incentive system to promote technological advances in a particular country. It balances public investment and private return. A patent can be defined as a grant by a state to an inventor (or his or her assignee) of the exclusive right to make, use, and sell the invention for a limited period of time in exchange for disclosure of the invention in a patent document. Therefore, the patent system can be viewed as integrating three components: invention, commercialization, and regulation. Establishment of a patent system, or an IPR system in general, in a country should address all three components. Strengthening only the regulation side (i.e. the law and its enforcement) will not yield optimal results. As the discovery of indigenous inventions increases, they need better protection, and this increases the importance of the IPR system.

Article 7 (Objectives) of the General Provisions and Basic Principles of the TRIPS Agreement states that “the protection and enforcement of IPR should contribute to the promotion of technological innovations and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations”. When transfer and dissemination of technology takes place in developing countries through cooperation or collaboration with developed countries, its result can be detected through certain science and technology indicators such as (i) international publications and (ii) the number of resident patents in a given developing country. Statistics show that most developing countries have a low number of resident patents, with less than 500 patent applications a year. This indicates low appreciation by intellectuals of the importance and usefulness of IPR, even though the IPR system has proven to be an instrument of development in industrialized countries. The lower number of patents in developing countries also indicates heavy dependence on imported technology from developed countries. Engineers and scientists in developing countries do not appreciate the importance of the IPR system as an incentive for increasing technological innovations and their contribution to social and economic welfare.

## Intellectual property laws in Indonesia

Current IPR laws in Indonesia include the following:

- Amended Law No.12 of 1997 on Copyrights
- Amended Law No.13 of 1997 on Patents
- Trademark Law No.14 of 1997

Under the World Trade Organization’s (WTO’s) TRIPS Agreement, new laws concerning integrated circuits, industrial design, trade secrets, geographical indications and plant varie-

ties need to be implemented by January 2000. It has become a great challenge for the intellectual community to absorb the modern IPR system and integrate it into its research and engineering activities. The intellectual community is beginning to appreciate the importance of the IPR system and its components – copyrights, patents and trademarks.

The additional regulations enacted by WTO members under the TRIPS Agreement show that protection of IPR is an ever-changing area, and that new regulations are needed to protect intellectual property related to advances in art, science, and technology, particularly biotechnology and information technology.

Most developing countries have the daunting task of building awareness of the new IPR system. They also have to increase their capacity to cope with rapid advances in science, technology and art. Developing countries like Indonesia are also rich in biodiversity and represent biodiversity “hot spots”. They need to conserve their vast biological wealth, rich cultural diversity and associated traditional knowledge (TK).

### Traditional knowledge in Indonesia

Most works of traditional art in Indonesia are anonymous (Sedyawati, 2000), though sometimes the names of creators of ancient art are known. Artists in ancient times did not have objections to seeing their work copied by other artisans and sold as souvenirs. This attitude is understandable from the traditional viewpoint that copying a work of art is a token of respect and appreciation. This practice does no harm as long as it is confined to the society that created the art form in question, but having people from a different society derive commercial benefit from such ventures becomes harmful to the society concerned. Under such circumstances the need arises to protect the IPR of traditional societies.

Art forms within a culture, be they visual, performing or media arts, should be understood as an integral component of the culture as a whole. Edi Sedyawati (2000) maintains that conspicuous use is frequently made of traditional expressions of art for commercial ends, without permission and without using proper legal procedures. Sedyawati recommends the protection of such art. However, within the traditional society itself, such dissemination of its works of art could be considered for exemption from such legal procedures.

With regard to neighboring rights, it should be noted that in many forms of traditional art, especially in performing arts, the performer is at the same time the creator. A typical example is the case of the master puppeteer (*dalang*). Although conforming to the basic conventions of the wayang performance tradition, the *dalang* is free to innovate and to develop personal renderings of standard themes, offering unique interpretations.

Sedyawati (2000) recommends that traditional works of art that have developed a specific characteristic style and technique be protected. Their values should not be misrepresented by inappropriate use, they should not be used for commercialization without proper compensation, and they should always be acknowledged as the property of the ethnic group that created that art. Such protection should not, however, obstruct the creative development of such art.

In Indonesia, medicinal plants are frequently used as herbal drugs, as decoctions, and as fresh vegetables. They are taken with food, especially by women, to maintain good health. People take herbal drugs obtained from plants as an aqueous extract *Jamu*; a mixture of several liquid extracts obtained from various plants is commonly available. Embossed pictures at the Borobudur temple show people preparing *Jamu* and depict other plants used in traditional remedies. Medicinal plants are more commonly used in the rural areas. The use of plants in alternative health care and in cosmetics is being promoted both by the government and by the public for economic benefit, though Goeswin (1998a, 1998b, 2000) has expressed concern about the indiscriminate exploitation of plant biodiversity for medicine and alternative health care. The traditional healers in Indonesia are called *dukun* in Java or *balian* in Bali. A *dukun* diagnoses disease by oral interviews and observation of external symptoms but sometimes they observe a glass of water to diagnose disease.

In the modern scientific tradition, interest in using medicinal plants started in 1775 with the publication of *Herberia Ambionensis* by Rumphius. Several other books have been written

about *Jamu* and other herbal medicines. The Balinese have a tradition of using rontar (*lontar*) leaves<sup>1</sup> as paper to write about rules, doctrines, philosophy, folklore, and legends, including their knowledge of traditional medicine.

Suradisastra, Sejati,, Supriatna and Hidayat. (2002) have written about a method for growing rice in Bali called *Subak*. The method has been carefully described in writing and has been integrated into people's rituals and daily life. On the other hand, the process of producing *keris*, a kind of weapon in Java, is written in the local language but kept secret in a safe place and treated as a kind of trade secret. Goeswin states that written culture is relatively new for Indonesia. The colonial Dutch began offering modern education during the nineteenth century to local administrators who were loyal to them.

## Protection of traditional knowledge

As was stated at the beginning of this discussion, the intellectual community of Indonesia is beginning to learn and value the importance of standard IPR. With the implementation of the TRIPS Agreement, the community has become aware of the IPR regime and hence of the importance of industrial designs and plant varieties. The draft of a new IPR regulation has been submitted to the People's Consultative Assembly.

In line with awareness of the TRIPS Agreement, Indonesians are also concerned about protecting their TK, in particular in the field of biodiversity. Although some institutions and nongovernmental organizations have organized several meetings on this theme, systematic activities on a national scale for the protection of TK (as defined by Blakeney, 1999) are still in the planning stages.

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## Notes

- <sup>1</sup> Leaves of the lontar palm tree.

# ACCESS TO GENETIC RESOURCES, PROTECTION OF TRADITIONAL KNOWLEDGE, AND INTELLECTUAL PROPERTY RIGHTS: THE COSTA RICAN EXPERIENCE<sup>1</sup>

Jorge A. Cabrera Medaglia

## Introduction

The knowledge, innovations, and practices of indigenous peoples and local communities have importance for the welfare of our societies, medicine, crop improvement, development of sustainable agricultural practices, and other areas. This is also true of wild and domesticated genetic resources and the knowledge associated with them (see UNCTAD, 2000, RAFI, 1994 and Cabrera, 1998). The role of plant genetic resources in securing food supplies has been acknowledged (Dutfield, 2000). Various authors have described the contributions made by biological diversity to the invention and production of new medicines and drugs.<sup>2</sup> Traditional knowledge (TK) plays a similar role in the development of new assets and services, especially in the areas of medicine and agriculture.

The following discussion provides basic information on Costa Rica's experience regarding access to genetic resources, the distribution of benefits, and the establishment of *sui generis* systems basically derived from the adoption and implementation process of the Law of Biodiversity. Also presented are lessons that may be derived from the country's experience in this area.

## The importance of the debate

The biological wealth of tropical countries and the associated TK, coupled with biotechnology techniques, have led to a reconsideration of the "hidden" value of these assets. The interest of agrochemical, seed, and pharmaceutical enterprises in bioprospecting in our natural environments and in using associated TK to guide this process has rapidly increased. Access to Costa Rica's biological resources and knowledge requires compliance with the following requirements:

- Securing the prior informed consent (PIC) of the state and other owners of the biological, genetic, and biochemical knowledge or resources.
- Negotiating the sharing of benefits derived from access to the biodiversity and the associated TK, through an agreement or contract based on "mutually agreed terms" under which the access is granted.

The aim is to control access to biological, genetic, and biochemical resources and to protect all knowledge, innovations, and practices of local communities and indigenous people. It is now recognized that for centuries indigenous people and peasants have developed their own systems, practices, and knowledge regarding agriculture disease control, natural resource management, and medicine. This knowledge is useful and of great value to social sectors other than those that created and developed it. In the past, work on traditional improvement of crops and animals and associated indigenous knowledge was considered a non-exclusive public asset that could be accessed freely and without cost. It was considered part of humanity's common heritage. However, from these genetic resources, which were obtained at no cost whatsoever, diverse products were developed, including new plant varieties, pharmaceutical products, and insecticides, which then became private property and subject to intellectual property rights (IPR) legislation. They were then made available to developing countries at a price, through the mechanisms of plant collection rights, patents of invention, and trade secrets.

The inequity involved in genetic resources being supplied without cost by the South and the processed products having to be bought at a price from enterprises in the North was justified on the basis of the concept of biological diversity being defined as part of humanity's common

heritage – that is, a public asset, which could be used without payment. This allowed the genetic richness of developing countries to be extracted and used without any compensation. Insecticides, medicines, and improved seeds are made available as private property and must be paid for.

Parallel to the emergence of an international conscience that rejects the “common heritage” concept, new biotechnologies (basically DNA recombination and cellular fusion), progress in microelectronics, and other techniques used to test biological materials have revitalized the interest of pharmaceutical, chemical, seed, and biotechnological enterprises both in genetic resources found in the wild and in the associated TK.

The Convention on Biological Diversity (CBD) has tried to change the way things stand. However, success depends on each individual country and on the capacity for cooperation and coordination that exists among them for establishing policies and laws to regulate access to their biological natural resources and TK, and for sharing of benefits thereof.

The CBD establishes as one of its objectives fair and equitable sharing of benefits derived from access and use of biodiversity. This involves regulating access to these resources (and associated knowledge), while subjecting this access to the laws of the country and to a fair and equitable sharing of the benefits with the various stakeholders.<sup>3</sup>

The implementation of Articles 3 and 8 has involved deep and complex debates, and little progress has been made in resolving the underlying issues. This constitutes an important challenge for local groups, indigenous people, governments, regional entities, and the international community in general. The following analysis looks at how these provisions were implemented in Costa Rica.

### **Some reflections on the Biodiversity Law in Costa Rica**

The processes used to draft the Law of Biological Diversity (LBD) and especially provisions pertaining to the issues of access, protection of TK, and IPR are particularly relevant. In 1996, when the Biodiversity Bill was restrictive and contrary to national reality and scientific research, several comments and criticisms were made. Numerous observations were sent to the Legislative Assembly (Parliament), including a complete bill prepared by the Advisory Commission on Biodiversity, which was never formally processed legally (Cabrera, 1999).

In January 1997 a second version of the bill was presented, which – despite considering some of the main objections – repeated several of the concepts and provisions of the former bill and, therefore, met with the same opposition. The impasse resulting from the opposing points of view led to the creation of a Special Mixed Commission of the Legislative Assembly to draft a bill based on the existing text after having obtained the Assembly’s promise to respect any agreement reached by the Commission. The Commission was chaired by the National University and included the main political parties, the Advisory Commission on Biodiversity, the Peasant Board, the Indigenous Board, the Union of National Chambers, the University of Costa Rica, the National Biodiversity Institute (INBio), and other parties.

At the end of 1997, a new draft of the project was completed and sent to Congress for approval. With some changes, the text was finally passed and published as a Law of the Republic in May 1998. When the provisions related to access, distribution of benefits, and protection of TK were prepared, a series of topics were considered, such as: resources covered (scope of application); basic definitions; procedures to grant PIC and mutually agreed terms; competent authorities; procedures used; terms for the distribution of benefits; and penalties.<sup>4</sup>

#### ***Aims of the LBD and access procedures***

In spite of the criticisms arising from the ambiguity of some of the standards, the LBD aims to set clear regulations for access to bio-resources and TK, and for sharing of derived benefits. Before this law was enacted, only some provisions of the Wildlife Conservation Act regarding permits for the collection of species of plants and animals and some research regulations, especially in relation to national parks, existed. There were no modern rules for regulating



agricultural matters. The LBD, whose application and interpretation are just beginning, establishes a basis for granting of access permits and contracts. Article 7 contains clear definitions of crucial topics such as access to biochemical and genetic elements, bioprospecting, PIC, biochemical and genetic elements, access permits, and the like.

Access and bio-prospecting definitions delimit the application of access procedures and at the same time address existing concerns on the subject. If the objective of research activity is an inventory or a taxonomic description, then the activity does not involve access issues and is regulated by Article 36 of the Wildlife Conservation Act.

The LBD clarifies the issue of ownership of genetic and biochemical resources of the wild or domesticated biodiversity. Article 6 declares these resources to be in the public domain; that is, they belong to the state, which acts as an administrator and establishes two ownerships, one for the biological or organic resource and the other for the genetic and biochemical resource.

The access procedure is precisely described in two chapters of the LBD. The competent body that grants access in the first place is the Technical Office of the recently created National Biodiversity Administration Committee (Conagebio) within the Environment and Energy Department. It has maximal capacity for decentralization and for defining legal instruments. It comprises the Environment Department (which presides), the Foreign Trade Department, the Health Department, the Department of Agriculture, the Costa Rican Fish and Aquaculture Institute, the National Rector Committee; the Indigenous Board, the Peasant Board, the Union of National Chambers, the Costa Rican Federation for Environment Conservation, and the Directorate of the National Conservation Area System.<sup>5</sup>

Conagebio is entrusted with the responsibility of preparing access and benefit-sharing policies and can revoke the rulings of the Technical Office on access issues.<sup>6</sup> The main duty of the Technical Office is to process, reject, and audit applications to access biodiversity resources (Art. 17, subsection a), as well as to coordinate with the Conservation Areas, the private sector, indigenous peoples, and peasant communities' actions relating to access (Art. 17, subsection B). It is responsible for organizing and updating a register of applications for access to the components of biodiversity and *ex situ* collections, and of the "natural" and "juridical" persons who work on genetic manipulations (subsection C). The Technical Office is expected to collect and update regulations related to the fulfillment of treaties and guidelines on biodiversity issues (subsection D).

Chapter V defines the requirements and procedures for accessing genetic and biochemical components and the protection of the associated knowledge. Conagebio is the entity responsible for proposing access policies related to genetic and biochemical elements of both the *ex situ* and *in situ* elements of biodiversity. It is expected to act as the mandatory consultative body for all application procedures for the protection of intellectual biodiversity rights (Art. 62). The LBD regulates the basic requirements for access, which include PIC, the sharing of benefits, the protection of the associated knowledge, and the way in which the activities will contribute to conservation (Art. 63). The procedures to be followed (Art. 64), the right to cultural objections (Art. 66), the Registry of Access Rights, and the protection of confidential information (Art. 67) are established.

The LBD regulates with more precision the issues of granting research and bio-prospecting permits (Art. 69), their terms, and other limitations and characteristics (Arts. 70 and 71); the requirements to apply for access (Art. 72); authorization of contracts signed between individuals requesting access to genetic and biochemical components and the Technical Office (Art. 74); and the possibility of contracts with universities and other duly registered centres (Art. 74). It stipulates that up to 10 per cent of the royalties must go to the conservation area, private owner, or indigenous territory, in addition to the payment of transaction expenses (Art. 76).

Chapter III regulates the limits of property rights (Art. 78) and the congruency of said rights with the objectives of conserving the biodiversity (Art. 79). The Technical Office must always be consulted in processes where IPR are granted for components of biodiversity; and its decision in these matters is binding (Art. 80).

Lastly, the LBD establishes grounds for protection of traditional, indigenous and community knowledge and establishment of a participatory process for the determination and registration of these *sui generis* intellectual community rights (Art. 82 and those following it). A system of fines for illegal access is established, and there is a section on the framework for sanctions (Art. 112).

The new Costa Rican legislation is ahead of the regulatory mechanisms of other Central American nations. In spite of some ambiguity and complexities and the lack of application, it serves as a guideline for how access must be regulated.

### **Some relevant issues**

Some relevant issues have hardly been considered, such as the need to distinguish between access for agricultural purposes and access for pharmaceutical purposes; the need to distinguish between research for commercial purposes and research for academic purposes; and the need for quick and special mechanisms for *ex situ* collections. These are some of the deficiencies of the present legislation, which need to be removed to the extent possible through appropriate regulations.

A current draft of Access Standards and Sharing of Benefits includes provisions on these matters with respect to agricultural genetic resources (including those conserved *ex situ*). Although there are no regulations, the differentiation and procedures that are particular to this issue must be addressed in order not to unnecessarily hinder a healthy flow of resources. In theory, access regulations must regulate the sending of materials by the *ex situ* conservation centres, which must begin with more flexible mechanisms, such as material transfer agreements, duly approved by the Technical Office.

For the protection of TK, several aspects were taken into account. The problems related to the use of existing mechanisms for the protection of TK have been documented in literature.<sup>7</sup> While it is true that some initiatives for the use of traditional mechanisms related to intellectual ownership have been outlined, such as geographical indications and designation of origins, collective trademarks (see Downes and Laird, 1999a), copyrights and related aspects, trade secrets, patents of invention, collection rights,<sup>8</sup> and so forth, there are problems with respect to the need to develop *sui generis* approaches to protection. Countries including Costa Rica, Panama, Peru, Thailand and Venezuela have already presented several concrete proposals. The Third World Network has prepared one of the pioneering proposals in this area (see Nijar, 1996).

Models have been suggested for protecting plant varieties in light of the obligation of Article 27.3.B of the World Trade Organization (WTO) Agreement on Trade-Related Aspects of Intellectual Rights (TRIPS Agreement), which develops the concept of *sui generis* protection.<sup>9</sup> Emphasis has been laid on how these *sui generis* systems (compatible with the mandate of Article 27.3.B, although evidently limited in this case to the characteristics of the same) can be used to protect this knowledge within the WTO framework.<sup>10</sup> Others have mentioned the relationship that exists between intellectual property and benefit sharing, TK and conservation, and sustainable use of biodiversity. These issues were taken into account when the Costa Rican law was being developed.

Issues relating to the relationship between intellectual property on the one hand and benefit sharing, TK conservation, and sustainable use of biodiversity on the other were considered when the Costa Rican law was being developed.

The Costa Rican system for the protection of TK is based on the following premises:

- The legal access provisions ensure prior informed consent and the sharing of benefits related to TK. The Technical Office, and eventually the National Biodiversity Commission itself, has the authority to control, authorize, and review this issue (Arts. 63, 65, 66 and 72, among others).
- Prior consent and sharing of benefits is a combination of access mechanisms, contracts or licenses and a *sui generis* approach based on registers.
- The existence and validity of various forms of knowledge and innovation and the need to protect them using appropriate mechanisms (Art. 77), be they patents, trade secrets,

copyrights, plant improvement rights, *sui generis* community intellectual rights or the like, have been recognized (Art. 78).

The legislation is oriented towards the protection of knowledge through a registry system.<sup>11</sup> The collective knowledge of indigenous peoples and access to genetic resources need to be acknowledged, among other issues. Thus an inventory will be made of *sui generis* intellectual community rights that the communities request be protected (Art. 84). However, these registry systems have been criticized for the difficulties that they can cause (see Ruiz, 1999 and Downes and Laird, 1999b). The main criticisms of these systems include the following: (i) the need to define “access to information”; (ii) the control exercised over said information; (iii) the possibility that communities that are not involved in the access grant prior consent to use the knowledge registered under the name of others; (iv) limitations of the restriction to the access to information

To define the scope, nature, and requirements of these rights, a participative consultative process must be started with the indigenous and peasant communities (Art. 83 of the Law of Biodiversity). This process will determine how intellectual rights of the community will be used, who will hold the title and who will receive the benefits (Art. 85).

### ***Specific issues for consideration***

Before rights and obligations, whether private or collective, can be assigned, the following specific issues need to be considered:

- Materials to be protected
- Protection procedures
- Granted rights and against whom these will be enforced
- Enforcement mechanisms

In the case of Costa Rica, some of these issues have been addressed, while others are yet to be defined through a consultative process. Following are salient points relating to these issues:

- **Materials to be protected:** The materials to be protected are the knowledge, innovations, and practices of local communities and indigenous peoples. Others, not yet been defined, include materials associated with genetic and biochemical resources (Art. 82) and those used in medicine, agriculture, and so on. They do not include folklore expressions.<sup>12</sup>

The possibility of regulation by sector (for example medicine) carried out in a progressive manner must be examined (for example, some proposals have focused on regulations for traditional medicine, leaving other topics for later discussion). However, some issues are yet to be defined, such as criteria for determining what is to be protected and the powers of the entity in charge of the registry (in this case, the Technical Office of the Commission, Art. 84). Otherwise, there is a risk of taking more from the public domain than is justified, creating speculative demands, and, generally speaking, preventing awareness of the scope of the rights and obligations of third parties and the actions that infringe on the agreed rights. For example, in the Peruvian case cited, if the knowledge is found to be in the public domain, prior consent can be omitted, although its use does grant the right to compensation by means of the fund created by the proposal, which is maintained by the payments arising from the use of protected resources (0.5 per cent of the sales derived from marketing). Evidently, some characteristics of these rights – for example, their evolution and adaptability – must be recognized in order to take the necessary precautions in the registry system.

- **Registry procedures:** In the Costa Rican case registration is voluntary and declaratory, free of charge, unofficial, informal, and for an indefinite term. Other elements (e.g. the possibility of opposition or the existence of an advisor who knows the grounds for repeal and annulment) must be indicated in the procedures. The relationship between this protection and others that can be claimed through the traditional IPR scenario must likewise be acknowledged (e.g. geographical indications and brands).
- **Granted rights:** Costa Rican law has little to say on this issue, but the rights can be extracted from several provisions (e.g. the need for PIC and for mutually agreed terms

for benefits in cases of access and use; the right to cultural objection to oppose its use due to religious reasons). In general, the rights derived from the existence of *sui generis* intellectual community rights must be defined. This issue is as critical as that of the scope (limitations) of the said rights. And, of course, its limitations (e.g. in terms of loss or mandatory permits) must be defined. The fact that they are community rights does not exempt them from the above-mentioned modes. Another issue requiring regulation has to do with the collective and private aspect of said rights. The law mentions their community nature, which does not necessarily mean that they cannot be private. Especially in local communities, the assumption that all knowledge is generated collectively is difficult to uphold.

- **Observance of the rights:** If no substantial mechanisms are established for enforcement of the rights, protective regulations will not suffice. In Costa Rican law this issue is addressed only through a fine for illegal access through the requirement to present the certificate of origin and the approval of IPR. The mandatory consultation with the Technical Office of Conagebio regarding IPR applications that use resources or knowledge and the binding nature of the decisions of the Technical Office underpin this requirement.<sup>13</sup>

Finally, the success of the regulations will depend largely on the existence of the aforementioned mechanisms and the participative consultation process regarding the scope of the regulations. For this, the experience of India, the Peruvian bill, and the documentation and database registries that are being prepared in Venezuela, among others, can be used.

In addition, according to the recommendations issued by the CBD Panel of Experts on Access and Benefit Sharing, the following must be taken into consideration as components of a possible *sui generis* law:

- Acknowledgement of ancestral rights with respect to knowledge, innovations, and practices related to genetic resources
- Acknowledgement of such rights even in cases where the information could be in the public domain
- Establishment of the principle that ancestral rights related to TK can have a collective nature
- Distinction between rights to genetic resources and rights to knowledge
- Supposition that the use of genetic resources also implies use of the associated knowledge (TK)
- Establishment of administrative and legal procedures to remove controversies
- Creation of obligatory mechanisms for equitable benefit sharing among the custodians, whether or not they are party to the access agreements
- Establishment of local registers
- Development of programmes and processes to strengthen TK systems

Likewise, the recent fifth Conference of the Parties of the CBD specifically considered the need to promulgate *sui generis* protection systems (Decision V/16 of COP V).

### **Creation of access regimes; difficulties and protection of traditional knowledge; obstacles and opportunities according to the Costa Rican experience**

Various analyses of cases related to ABS and protection of TK have been reported in the literature.<sup>14</sup>

The Costa Rican experience describes obstacles and achievements related to the regulation of access to genetic resources, intellectual property, and TK. There are two somewhat contradictory points of view regarding the regulation of the access to genetic resources (Callaux, Ruiz, and Tobin, 1999):

- Treating protection of and access to TK only as a *strategy* for conserving genetic resources and associated practices, or as a way to prevent their improper use and appropriation, especially through a system of IPR.



- Treating access to genetic resources as a *mechanism* that, while granting this protection, also plays an important role in the sharing of benefits and compensation for the commercial use of knowledge and resources. Accordingly it seeks to create or provide mechanisms for the sharing of benefits.

This paper supports the second of these two viewpoints.

Following is a summary of the main lessons that can be drawn from Costa Rica's experiences regarding the key issues of access, protection of TK, and IPR.

### ***Bioprospecting issues***

Bioprospecting entails exploration of biodiversity in search of useful biological resources. The bioprospector does not know for sure what a particular search will uncover. Richness in biodiversity does not necessarily translate into commercial products such as new medicines or seeds. While this risk can be mitigated with keys like TK, which significantly increase the chances of success,<sup>15</sup> uncertainty remains. For example, of the thousands of samples that the United States National Cancer Institute has collected and processed since the mid-1980s, few have reached the pre-clinical or clinical trial phase (Reid, 1997). Likewise, no product on the market has been a great success in terms of royalties.

Consequently, those who have asserted that bioprospecting would become a "green gold mine" have had to modify their predictions. For example, in Costa Rica the income obtained from bioprospecting through the year 2000 is a mere US\$5 million, in addition to other significant contributions (including in technology, training, equipment, contributions to the System of Conservation Areas, and – more importantly – the creation of national and negotiation capacities). Although this last aspect is the most significant acquired benefit, in comparison to the income from (for example) ecotourism, which in one year contributed some US\$500 million, the rate of return from bioprospecting is relatively small. Bioprospecting can be viewed as a component of a more extensive strategy for the conservation and sustainable use of biodiversity, rather than a solution for immediate conservation needs.

Simpson et al. (1995) believe that genetic prospecting may turn out to be of little help in the war to preserve biodiversity-rich habitats. They consider it unlikely that income from pharmaceutical research will generate significant funding. This conclusion is relevant, they argue, whether a single-contract approach or the vertical integration approach is adopted in investigations. Consequently, they conclude that the importance of contracts and vertical integration as a conservation strategy is overrated.

On the other hand, the cost of introducing medicine to a market of approximately US\$230 million (Gómez and Sittenfeld, 1993) versus the value of individual samples has led to the assertion that greater compensation for bioprospecting projects is difficult to justify when the capacity of the countries, communities, and institutions does not allow the granting of added value to samples or extracts (Asebey et al., 1995). Otherwise, our nations and communities will remain mere providers of raw materials for high-value industries that process them outside our borders.

### ***Role of the State and procedures***

It is probable that the existence of historical inequities regarding ABS has led us to consider the need for strict controls to prevent "biopiracy". Regulations in countries like the Philippines have shown how this type of approach results in non-realization of the objectives of the CBD and national laws, despite the good intentions of the proponents of such measures. Some of the regulations issued to date have focused more on controlling than promoting access.

These types of laws generate high transaction costs and bureaucratic procedures, and they discourage applications for access, without which it is impossible to talk about benefit sharing. The issue of transaction costs and draconian regulations that discourage applications has been considered by the CBD Panel of Experts on ABS and the CBD Conference of the Parties (COP), which have recommended ways to lower costs and revise procedures that result in access limitations (e.g. by adopting measures in user countries) (UNEP, 1999) As long as the

idea persists that access represents a form of colonialism instead of a mechanism for the generation of appropriate joint initiatives for all participating parties, the possibilities for generating desirable results will be limited.

In other words, the likelihood of sudden imposition of draconian access systems, both at the national (even local) and regional levels, has created significant uncertainty among the users of such resources. Efforts seeking absolute control over access have discouraged attempts to formulate access agreements.

Moreover, there is increased lack of legal certainty regarding the way in which PIC can be secured and the required permits and contracts. In addition to legal guarantees, it is necessary to have regimes that are sufficiently flexible and transparent. Likewise, a balance between confidentiality and transparency and availability of the results of the negotiations must be reached. However, this flexibility may be more easily obtained if the governments of the countries where the users reside take measures to guarantee the sharing of benefits. To date, this responsibility has fallen on the provider countries, and it is becoming evident that this approach needs to change.

The former Minister of the Environment in Colombia has stated that one motive for the negotiation of the Andean Decision 391 on the Access to Genetic Resources was “the economic potential of biodiversity as a source that could contribute to our development. At that moment we foresaw a great demand for access to the genetic resources of the countries in the area and, consequently, thought of the need to have tools to maximize our opportunities and protect our rights. It appears that recent history did not prove us right regarding the number of interested parties who would come on their own initiative to knock on the doors of the governments...”<sup>16</sup> It is clear that without access there is no benefit from genetic resources.

### ***Linking access with national strategies for the conservation and sustainable use of biodiversity***

The evolution of legal systems to ensure access to genetic resources has occurred separately from the development of national policies on conservation and sustainable use of biological diversity. Benefits, both monetary and non-monetary, contribute tangentially to the conservation process. Practical negotiations to allow access can help achieve much broader objectives if nations, through highly participatory mechanisms, establish public policies on this issue. In any case, these national policies need to develop and strengthen national capacities and institutions, which will lead to an increase in the value of these resources.

### ***The unique character of genetic resources for food and agriculture***

Genetic resources for food and agriculture have unique characteristics such as their interdependency and their relevance for food security.<sup>17</sup> Consequently, discussions within the CBD as well as future national regulations must take into consideration the special nature of these resources and thus foresee special access systems (including so-called simplified access), as well as be congruent with a multilateral access system such as the one negotiated under the sponsorship of the United Nations Food and Agricultural Organization (FAO) within the framework of the revision of the International Undertaking on Plant Genetic Resources. The parties should not establish legal measures that prevent the flow of these resources and hinder the operation of a multilateral system, with the condition that they contemplate appropriate benefit sharing in terms of financial resources, transfer of technology, training, and the like.

Taking this reasoning further, one must also recognize the existence of collaboration mechanisms and networks in agricultural matters. Their operation has provided significant benefits to farmers, and consequently their modus operandi must be supported, with some modifications.<sup>18</sup>

### ***Definition of property rights***

It is crucial that property rights over genetic and biochemical resources be defined. The CBD mentions only the sovereignty of the States over such rights, without taking into consideration



existing property rights. It is important to clearly distinguish among the concepts of property, sovereignty, and national heritage (see Ponce, 1996) in designing a mechanism for ensuring legal certainty. Uncertainty regarding the ownership of genetic resources leads to difficulties in securing PIC and determining participation in access negotiations. This in turn makes it difficult to frame appropriate access agreements, owing to the doubts that exist and company requirements for appropriate guarantees regarding the legality of the procedures in order to avoid legal and public relations problems.

### ***Strengthening the participation of local communities and Indigenous people***

To a great extent, the success of access regimes in contributing to the conservation of biological wealth depends on the extent to which the custodians of this wealth participate appropriately in the sharing of benefits and, consequently, in the definition of the legal and political frameworks related to the access. Only to the extent that these people, who are also holders of important knowledge and innovations, get involved and are heard and taken into account, can access to genetic resources become a useful mechanism to safeguard biodiversity. Ethical considerations are very important, since access is not simply a commercial initiative, detached from the profound ethical implications of the use of certain resources and knowledge.

### ***Access and technological change***

One can agree with Reid (1997) that technology plays an important, albeit in a sense contradictory, role in access issues. On the one hand, new research techniques have opened the door to the use of the components of biodiversity in previously unknown ways and have increased the value of these resources and knowledge as a whole. On the other hand, lower operating costs and the need to work with smaller samples have decreased the tangible value of such resources.

It is important to follow new developments in technology; eventually, advances in areas such as combinatorial chemistry may lessen the interest in biodiversity and TK.

### ***Access and its impact on basic national research***

Access regulations are based on the ideas of conservation of biological diversity, its sustainable use, and the fair and equitable sharing of benefits. Basic research is indispensable for reaching these goals, especially when crucial information on topics such as ecosystems and species is missing. Access rules may interfere with research conducted by universities and other institutions, and they definitely affect the degree to which the objectives of the CBD are attained, since they strive to control non-scientific activities in order to regulate the resulting commercial benefits. This undesired impact must be avoided through appropriate procedures that favour basic research activities.

### ***Questions regarding the relationship between access and intellectual property rights***

During the writing phase of the LBD, and as part of the preparation of access and benefit-sharing regulations, the unavoidable issue of IPR arose. Article 16 of the CBD recognizes that these rights must support and not oppose the objectives of the Convention. Different stands have been taken in relation to this issue, some asserting the complete incompatibility of the CBD with recent developments in IPR (see GAIA/GRAIN 1998).

The LBD establishes the need for IPR to be congruent with the objectives of the law in virtue of the integration principle (Art. 79). The law excludes the following from patentability: DNA sequences per se; plants and animals; unmodified microorganisms; essentially biological procedures for the production of plants and animals; natural cycles or processes themselves; inventions essentially derived from associated knowledge or traditional biological practices or material in the public domain; and inventions that, if monopolistically exploited, may affect agricultural products or processes considered basic for food and health (Art. 78).

Some see contradictions with several clauses in the TRIPS Agreement<sup>19</sup> and, therefore, according to the Costa Rican scenario, with the Constitution itself, as in the legislation treaties take precedence over ordinary law.

At the same time, it is important to highlight serious doubts<sup>20</sup> that, expressly or implicitly, led to these regulations:

- **Are traditional IPR systems always inadequate** for protecting knowledge, innovations, and practices, as is asserted by most supporters of the doctrine? Or, on the contrary, can they be used to protect important sectors (e.g. by the use of trademarks and certificate of origin)?
- **Can IPR indirectly establish value** for the biodiversity and associated knowledge when protecting a market of products that use genetic resources? If the answer is affirmative, to what extent can these mechanisms be used to claim this value (see Lesser, 1998)?
- **Is it possible and feasible to establish the certificate of origin** (see Tobin, 1997) in such a way that presentation of a certificate or other document is required to show that the benefit sharing and access are legal before IPR are granted for products or processes that have used genetic resources and TK? This instrument has been contemplated in the Peruvian regulation on plant collecting (Decree No. 008-96-ITINCI), Decision 391 of the Andean Community on the Common Regime for Access to Genetic Resources, Decision 486 of the same regional entity on an industrial property regime, in the LBD of Costa Rica (Art. 80), and Brazil's temporary measure on access to genetic resources and sharing of benefits (No. 2052), among others. This issue has been discussed in the WTO, specifically in the TRIPS Council and in the Committee of Trade and Environment, where various countries and groups have presented proposals for including the same in the review of TRIPS. Likewise, other forums like the World Intellectual Property Organization's Patent Treaty and the Biotechnology Working Group have addressed the issue, and the recently created Intergovernmental Committee on Traditional Knowledge, Genetic Resources, and Folklore may study it and make recommendations. At the same time, various objections have been raised, ranging from its incompatibility with WTO patentability requirements (Art. 27 of the TRIPS Agreement) to criticisms of a practical nature.<sup>21</sup>
- **To what degree do IPR have an impact on biodiversity** – for example, through restrictions on the exchange of seed through patents, collection rights, contracts, or technology for controlling gene expression? To what extent can traditional practices be impeded by patents or other rights granted to inventions that claim the use of genetic resources, even if from a legal point of view these rights should have never been granted, as the “inventions” were not new or lacked the appropriate level of invention (as has been discussed with respect to neem, turmeric, and the *Ayahuasca* plant, many patents related to which have been revoked in the United States or Europe)? Can such rights restrict the export of traditional products (e.g. beans in Mexico<sup>22</sup>) through the existence of patents or other IPR granted in the import market to third parties, based on the characteristics of these products?
- **To what extent do IPR have a direct impact** on the environment and conservation and sustainable use of genetic resources and TK? For example, to what extent do they aid or impede the transfer of healthy environmental technologies; prevent or reduce negative effects such as genetic erosion; increase the use of synthetic chemicals (especially sale of transgenic seeds that are resistant to herbicides); or direct research and development towards undesirable areas and create homogeneous agriculture that is ill-adapted to local needs?
- **Can the *sui generis* system be used** for plant varieties foreseen by the WTO in its Article 27.3.b to protect TK and stipulate benefit sharing, despite the fact that in the framework of the TRIPS Agreement this expression acquires a unique meaning (see Leskien and Flitner 1997)?
- **Does it enable the stipulation of IPR** in access contracts and guarantee greater returns to the countries of origin or local contractors, including communities and populations, provided this protection entails greater income for the enterprises involved (in the absence of copies and competition)? Do IPR then constitute a mechanism that in the case

of commercialization yields higher royalties and, consequently, make a greater contribution to the sharing of benefits?

## Lessons learned in the negotiation of access contracts and its potential applicability for the protection of TK

This section covers the main lessons learned from the negotiation process relating to agreements and contracts by the National Institute of Biodiversity (INBio), a private, non-profit institution. The structure, policies, and programmes of INBio have been discussed in several publications (see Gámez and Sittenfeld, 1993). In general, significant experience in benefit sharing has been gained since the agreement with Merck in 1991. At the same time, INBio signed an Agreement of Cooperation with the Ministry of the Environment, in which it committed itself to granting it 10 per cent of the research operation budget and 50 percent of the royalties that it would eventually get, in addition to other benefits (training, etc.).

To date, a series of collaboration agreements have been signed,<sup>23</sup> such as:

- **Academic agreements with universities and other research centres** (University of Costa Rica, National University, Strathclyde Institute for Drug Research, Massachusetts, etc). Although the agreements differ, all of them are oriented toward the search for knowledge and new products through research and collaborative approaches.
- **The Cooperative Biodiversity Group**, together with Bristol Myers, Cornell University, and the University of Costa Rica, with the goal of obtaining useful substances from insects and increasing human resources and knowledge of ecology, taxonomy, and chemistry.
- **Agreement with INDENA**, an Italian pharmaceutical company, for examining the antiviral and antimicrobial activity of natural components.
- **Agreement with Givaudan-Roure Fragrances** to identify and collect fragrances and aromas from the ecosystems in order to commercialize new perfumes, extracts, and the like.
- **Agreement with La Pacífica and British Technology Group** for the domestication, extraction, and evaluation of a potential noma-tocidal effect of the DMDP plant, which could represent significant benefits regarding substitution of synthetic chemicals.
- **Agreement with Diversa** to prospect for enzymes with industrial potential derived from microorganisms.
- **Agreement with Phytera** to obtain crops *in vitro* from diverse plant species for the purposes of identifying metabolites that can be useful to the pharmaceutical industry.
- **Agreement with the Strathclyde Institute for Drug Research** to develop new pharmaceutical products and distribute extracts prepared by the programme to a larger number of enterprises related to bioprospecting.
- **Agreement with Eli Lilly** to find pharmaceutical and agricultural uses for plants.
- **Agreement with AKKadix Corporation** for the isolation of bacteria from soil samples and Costa Rican plants, for example.

These and other contract relationships have provided the following types of benefits:

- Monetary benefits through direct payments
- Payments for supplied samples
- Covering research budgets
- Transfer of important technology, which has enabled development of the Institute's infrastructure, which can be used for investigation and generation of the Institute's own products
- Training of scientists and experts in state-of-the-art technology
- Negotiation experience and knowledge of the market
- Support for conservation through payments to the Ministry of the Environment for strengthening of the National System of Conservation Areas
- Transfer of equipment to other institutions (e.g. the University of Costa Rica)
- Future royalties and milestone payments to be shared 50/50 with the Ministry of the Environment
- Creation of national capabilities for assessing the value of biodiversity resources

The significance of the contract approach must not be underestimated. Even in knowledge registry systems, whenever more is sought than simply protection of TK and prevention of its undue appropriation by third parties, the commercial use of the knowledge implies some type of negotiation to obtain a license for sales and transfers. There is thus an element of contractual agreement involved.

The above suggests the importance of the following ingredients:

- **A clear institutional policy** regarding the criteria demanded in prospecting contract negotiations. In INBio's case, these are transfer of technology, royalties, limited quantity and time access, limited exclusiveness, not causing a negative impact on the biodiversity, and direct payment for conservation. For INBio this policy has led to the stipulation of minimum requirements for initiating negotiations, and these requirements have resulted in the rejection of some requests – for example, in situations involving very low royalties or lack of will to provide training. The institutional policy provides greater transparency and certainty for future negotiations. These same policies must be taken into consideration when local communities and indigenous peoples, such as the Kuna in Panama, adopt legal guidelines (Cabrera, 1998) in the contractual arrangements they enter into. The policies should include other relevant ideas (e.g. regarding the impossibility of patenting certain elements, licensing as opposed to complete transfer, etc.).
- **The existence of national scientific capabilities** and, consequently, the possibility of adding value to biodiversity elements. These conditions improve the negotiating position and benefit sharing which are to be stipulated in contract agreements. As was previously mentioned, the need to assign an aggregated value to material, extracts, and the like is crucial if one wishes to be more than just a genetic resource provider. The development of human, technical and infrastructure capacities, together with the institution's prestige, have permitted better negotiation conditions. The existence of TK that can be involved in operations (which is not applicable in INBio's case) implies greater scientific capacity and consequently leads to better compensation conditions.
- **Knowledge of operational norms** as well as of changes and transformations taking place in the business sector, and of the scientific and technological progresses that underlie these transformations. It is essential to be familiar with how different markets operate and the access and the benefit-sharing practices that already exist in these markets. These vary from sector to sector; for example, the economic dynamics of the markets in nutraceuticals, ornamental plants, crop protection, cosmetics, and pharmaceuticals are complex and different.<sup>24</sup> This knowledge is needed to correctly negotiate royalties and other payment terms. Also crucial is knowledge regarding the operational aspects of these markets. For example, when INBio began negotiating new compensation forms, such as advance payments or payments on reaching predefined milestones, it was vitally important to know the approximate amounts the industry was likely to pay.
- **Internal capacity for negotiations.** This includes adequate legal skills relating to the main commercial and environmental law aspects. Negotiations involve a scientific aspect, a commercial aspect, a negotiation aspect, and legal aspects. The latter include not only national trade law but also international environmental law, conflict resolution, and intellectual property. For these reasons, the creation of interdisciplinary teams is crucial (Sittenfeld and Lovejoy, 1998). At the same time, the need for such a team is considered one of the greatest weaknesses in the contractual mechanisms. Solutions such as facilitators for "levelling the negotiation power" have been proposed (Chaytor et al., 2000). Unfortunately, when one speaks of benefit sharing, and as long as no appropriate multi-lateral mechanisms exist, the contractual systems are inevitable. The absence of an interdisciplinary team keeps one of the parties at a disadvantage, especially given that pharmaceutical companies possess enormous legal and negotiation capabilities.
- **Innovation and creativity capabilities** for obtaining compensation. An ample spectrum of potential benefits exists. In the past, interesting benefit-sharing formulas, other than the traditional ones, have been developed through the appropriate use of negotiations. (An example is the collection of fees for visiting gene banks having collected material.) Fortunately the contractual path permits parties to adapt themselves to specific situations.



- **Understanding of key subjects such as IPR;** the importance of warranties; clauses on ways to estimate benefits (net, gross, etc.); requirements and restrictions involving third-party transfer of the materials (including subsidiaries) and the obligations of such parties; precision of the key definitions, provided they condition and outline other important obligations (products, extracts, materials, chemical entities, etc.); precision of the ownership (IPR and others) of the research results, joint relationships, etc.; confidentiality clauses in the agreements and how to balance them in relation to the need for transparency in the terms of the agreement; termination of the obligations and definition of the survivor of some obligations and rights (e.g. royalties, confidentiality, etc); and conflict resolution. The complexity of negotiated agreements has been made clear, and this is related to sub-clause D above. For example, which outcomes will give rise to the sharing of benefits (e.g. royalties) will depend on the nature of the definitions (e.g. product, extract, entity). A more comprehensive definition results in a better position. Likewise, delimiting the areas or sectors where the samples can be used, the net sales, and what can be excluded are examples of some aspects that must be specified. Likewise, the procedures and rights in the case of joint and individual inventions are of interest (e.g. preference and acquisition rights), as well as the conditions for the transfer of material to third parties (under the same terms as the main agreement, need for consent or information, transfer to third parties so that certain services can be performed, etc.).
- **A proactive focus according to institutional policies.** There is no need to remain inactive while waiting for companies to knock on the door. An active approach (supported, for example, by an institutional policy that permits an understanding of national and local requirements) can result in significant benefits. The existence of a business development office with a highly qualified expert staff; attendance at industry seminars and activities; distribution or sharing of information and material; and direct contacts all facilitate responses to institutional challenges. INBio's current policy assumes that it is not enough to wait to be contacted; one must have and maintain one's own approach.
- **An understanding of national and local needs** in terms of technology, training, and joint research. There is a need for international strategic alliances. Even when an institution or community possesses adequate resources to face a concrete demand, knowing the national situation and the strategic needs will permit it to reach better agreements and fulfill a mission that transcends the institution's interests. It will permit the prospecting to benefit society as a whole.
- **Macro policies and legal, institutional and political support.** It has been pointed out that macro policies for dealing with bioprospecting have to exist (Sittenfeld and Lovejoy, 1998). These policies are clear rules on aspects of the "bioprospecting framework": biodiversity inventories, information systems, business development, and access to technology. Costa Rica owes its success not only to the existence of institutions having experience in negotiation but also to its set of policies and actions, such as a current biodiversity inventory; the existence of a National Conservation Area System that assures the availability of resources; the possibility of future supplies and provisions; and mechanisms that contribute to the conservation of biodiversity, as part of the contractual systems. At the same time, the possibility of possessing adequate instruments for information management, systems of land and property ownership, and the like contributes, jointly with existing scientific capacity, to the creation of a favorable environment for bioprospecting and makes it possible to attract joint enterprises.

Other elements include trustworthy partners, one of the most relevant aspects in joint undertakings (see Sittenfeld and Lovejoy, 1998).

Because of the uncertainty created by the new access rules, they are often denounced by the business community. The emergence of these new regimes, together with the fact that their purpose is essentially to control genetic information, its flow, supply and reception (a topic where little national, regional or international experience exists) has been a cause of concern owing to the possibility of contravening legal provisions. That has led to a policy of including clauses related to the need to comply with local regulations; demonstrate the contracting parties' right to fulfill their obligations pursuant to national laws; present the appropriate permits and licenses; and so forth. At the international level, various bioprospecting agreements around

the world are the target of complaints, claims and lawsuits, precisely because of the lack of legal certainty. This situation hardly facilitates the conduct of business activities and joint ventures.<sup>25</sup>

## Conclusions

The Costa Rican case has interesting features that make it worth examining, although it does not necessarily constitute an example to be followed elsewhere. The peculiar circumstances of the national situation (see Mateo, 1996, for these special situations), the size of the country, the structure of the central government, and its political, educational, and social situation have led to the development of particular conditions. Costa Rica is an example of a nation that decided to move ahead instead of continuing to discuss the difficulties involved. The practical experiences in access and benefit sharing that are embodied in contracts and collaboration treaties with the public and private sectors at the national and international levels; the creation of a biodiversity law that seeks to respond to the challenges of the CBD; and the regulation of general *sui generis* systems principles are all elements that make possible the formulation of concrete proposals for generating a debate.

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## Notes

- <sup>1</sup> Document prepared as a consultant to the UNCTAD.
- <sup>2</sup> See the list of products derived from biodiversity provided by Cragg 2000.
- <sup>3</sup> Articles 15, 16, and 19.
- <sup>4</sup> For the aspects that these systems must address, see Glowka 1998.
- <sup>5</sup> LBD, Article 15.
- <sup>6</sup> LBD, Article 14.
- <sup>7</sup> See Dutfield 2000, Posey and Dutfield 1996, Axt et al. 1993, and Cabrera 1998, among others.
- <sup>8</sup> See the analysis of this applicability in WIPO 2000.
- <sup>9</sup> See Leskien and Flitner 1997.
- <sup>10</sup> The concept of *sui generis* systems included in the TRIPS Agreement is much more limited and is conditioned by the characteristics of this agreement. Thus it differs from the notion of a *sui generis* system as something particular, of its own class, which can be developed to protect TK, independently from the references in Article 27.
- <sup>11</sup> This has been set into motion in India (see Kaushik 2000, Dutfield 2000), in Venezuela (Márquez, personal communication) and in the Peruvian draft proposal for the protection of collective knowledge.
- <sup>12</sup> This is contrary to the recent Panamanian law No. 26 of June 2000 (“Of the Special Intellectual Property Regime on the Collective Rights of the Indigenous Population”), which only regulates this issue.
- <sup>13</sup> The Panamanian law and the Venezuelan Law of Biodiversity (No. 5468, May 2000) contemplate greater provisions for civil and penalty sanctions and for administrative measures.
- <sup>14</sup> See Carrizosa 2000 and CBD documents on benefit-sharing cases presented to the Fourth Conference of the Parties, among others.
- <sup>15</sup> Balick (cited by Cabrera 1998) mentions an increase of 400 per cent.
- <sup>16</sup> Cited by Carrizosa 2000.
- <sup>17</sup> See Dutfield 2000 and Astudillo, Salazar and Cabrera 2000.
- <sup>18</sup> See Saín, Cabrera, and Quemé 1999.
- <sup>19</sup> See Carvalho 2000.
- <sup>20</sup> See Cabrera 2000 and Cabrera and Alarcón 2000.
- <sup>21</sup> Difficulty regarding plant varieties originating from different countries and cross-breeding and retro-breeding; the fact that a patented process or product does not always necessarily reach the market; the additional workload for the Office of Industrial Property; the lack of patenting of multiple products derived from tropical biota; and so on.
- <sup>22</sup> In December 1999, the US company POD-NERS started a legal action targeted at the import of beans from Mexico, arguing that this contravened IPR on bean varieties, which apparently descend from varieties widely eaten by Mexicans. In fact, the acquisition of genetic material originated with the purchase by the company president of a bag of commercial seeds in Sonora. The plaintiff requests royalties of around 6 cents per pound of beans. For further details, see RAFI 2000.
- <sup>23</sup> See Mateo 1996 and Mateo 2000.
- <sup>24</sup> For more on this topic, see Ten Kate and Laird 1999.
- <sup>25</sup> Examples are complaints regarding the agreement between Diversa and the Autonomous University of Mexico as well as the agreement between this company and Yellowstone Park, this last one recently solved in favour of the park. Another example is that of complaints about the agreement between Venezuela’s Ministry of the Environment and the Federal University of Zurich, which involves TK of the Yanomamis.

# **A SUI GENERIS SYSTEM FOR PROTECTING TRADITIONAL KNOWLEDGE UNDER THE CBD: THE OFFICIAL POSITION OF THE GOVERNMENT OF COSTA RICA<sup>1</sup>**

**Margarita Umaña**

## **Introduction**

Costa Rica signed the Convention on Biological Diversity (CBD) in 1992 and accepted international obligations to decrease the rate at which biodiversity has been disappearing in recent decades. The CBD and its Annexes I and II were approved by Act No. 7416 published in the *Diario Oficial* in 1994. The Biodiversity Law was approved in Costa Rica as part of its commitments on ratification of the CBD.

The country shares the CBD's objectives regarding the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits derived from the use of genetic resources. It seeks to do so through controlled access to these resources and appropriate transfer of pertinent technology, taking into account all rights to those resources and technologies, as well as through appropriate funding.

## **Administrative organization of the Biodiversity Law**

The Biodiversity Law<sup>2</sup> was published in the official newspaper *La Gaceta* No. 101 in 1998, and became effective at the same time. It establishes that the Ministry of the Environment and Energy (MINAE) will coordinate the administrative arrangements for the management and conservation of biodiversity through the National Commission for National Biodiversity Administration (CONAGEBIO), supported by a technical office and the National System of Conservation Areas (SINAC).

The duties of CONAGEBIO include drafting national policies on conservation, ecologically sustainable use, and restoration of biodiversity as directed by the CBD and other international agreements and treaties. The Commission meets regularly and comprises the following representatives from the public and private sectors:

- The Minister of the Environment and Energy or his or her representative, who shall also be the Chairman of the Commission and the person responsible for its due performance
- The Minister of Agriculture or his or her representative
- The Minister of Health or his or her representative
- The Executive Director of the National System of Conservation Areas
- The Costa Rican Fish and Aquaculture Institute
- The Ministry of Foreign Trade
- The National Peasant Board Association
- The National Indigenous Board Association
- The National Rector Committee
- The Costa Rican Environment Conservation Federation
- The Costa Rican Union of Private Business Chambers

SINAC is an institutional management and coordination system with competence in forestry, wildlife, protected areas, and protection and conservation of hydrological basins and water resources. Its goals include policy-making, planning, and execution of processes for achieving sustainable management of the natural resources of Costa Rica. The system comprises the following entities:

- The National Conservation Area Committee
- The Executive Secretariat
- The administrative bodies of the Conservation Areas
- The regional councils of the Conservation Areas
- Local committees

Regarding the creation of these two entities through the Biodiversity Law, in September 1998 the Office of the Attorney General of the Republic filed a lawsuit in the Constitutional Court against some articles of the Biodiversity Law. Specifically, the Attorney General argued that the law grants CONAGEBIO and SINAC greater powers than a decentralized entity can have, and that this goes against the constitutional principles of the duties of the Executive Branch. Moreover, it questioned the financial administration of the CONAGEBIO and the SINAC. Until a decision is reached on the above constitutional issues, neither of the two entities can issue final directives or have the financial resources for carrying out the tasks entrusted to them, which has obstructed their functioning. However, it is important to examine and understand certain articles of the Biodiversity Law regarding the protection of traditional knowledge (TK).

### **The Biodiversity Law’s general provisions for protecting traditional knowledge**

Article 1 of the law establishes that the law’s purpose is to conserve biodiversity and encourage sustainable use of biological resources, with fair and equitable sharing of the derived benefits and costs.

Article 3 establishes, with regard to the scope of the law, that the law “shall specifically regulate the use, handling, associated knowledge, and fair and equitable distribution of the benefits and costs derived from the use of the components of biodiversity”.

According to Costa Rican legislation, the exchange of biochemical and genetic resources and the associated knowledge, derived from non-profitable practices, uses, and customs between indigenous peoples and local communities, are exempt from this Law.

Of the definitions given in Article 7 of the law, following are those relevant to TK:

- *Biodiversity*: The variability among living organisms from all sources including *inter alia* terrestrial, marine and other aquatic ecosystems and ecological systems of which they are part; *this includes diversity within species, between species and of ecosystems*. For the purposes of this law, the term *biodiversity* includes intangible elements, such as traditional practices, knowledge, and individual or collective innovations with an actual or potential value associated with biochemical and genetic resources, protected or otherwise by systems of intellectual property or *sui generis* registry systems.
- *Knowledge*: Knowledge is a dynamic product generated through the experience of society over time; it can be produced in a traditional manner or by scientific practices.
- *Prior Informed Consent*: A procedure by which the state, private owners, or local and indigenous communities, where appropriate, after having received all the information required, consent to allow access to their biological resources or to associated intangible components under mutually agreed conditions.
- *Access Permit*: Authorization granted by the Government of Costa Rica to carry out basic bioprospecting research, procuring, or marketing of genetic materials or biochemical extracts of the components of biodiversity, as well as their associated knowledge to individuals or institutions, national or foreign, requested through a process regulated by this legislation.

Article 9 establishes the general principle of “Respect for cultural diversity,” according to which the diversity of cultural practices and the knowledge associated with different components of biodiversity must be respected and encouraged, in accordance with the national and international legal framework, particularly in the case of peasant communities; indigenous people, and other cultural groups.

Article 10 of the law establishes the regulation of access, in order to ensure equitable sharing of social, environmental, and economic benefits among all sectors of society, paying special attention to local communities and indigenous people and recognizing and remunerating the knowledge, practices, and innovations of indigenous people and local communities for ecologically sustainable use and conservation of the components of biodiversity.

## Chapter V of the Biodiversity Law: access to genetic and biochemical components and protection of the associated knowledge

Chapter V establishes basic access requirements in relation to the regulation of access to genetic and biochemical components and the protection of the associated knowledge: prior informed consent of the representatives of the area where access takes place; the counter-signing of said prior informed consent by the Technical Office of the Commission; terms for transfer of technology and equitable benefit sharing agreed to in the permits, treaties, and concessions, as well as the type of associated knowledge protection required by the representatives of the area where access takes place. It defines ways in which said activities will contribute to the conservation of species and ecosystems and stipulates the designation of a legal representative resident in the country to deal with an individual or legal entity residing abroad. All research and bioprospecting programmes related to genetic or biochemical material on Costa Rican territory require an access permit.

In matters of intellectual property rights, the issued resolutions related to biodiversity must be consistent with the objectives of this law.

In relation to the protection of TK, Article 82 of the Biodiversity Law establishes that the state recognizes and protects under *sui generis* systems protected by community intellectual rights, the knowledge, practices, and innovations of indigenous peoples and local communities concerning the use of the biodiversity and its associated knowledge. The mere existence of the cultural practice or the knowledge associated with genetic and biochemical resources is sufficient for this right to exist.

Article 85 of the Biodiversity Law foresees that the participation process will include the Technical Office of the Commission, the National Indigenous Board, and the National Peasant Board, and that this process will determine how the *sui generis* community intellectual rights will be determined; it will specify the holders of the rights and the beneficiaries. However, the detailed process by which the titleholders of the *sui generis* community rights are to be identified has yet to be defined in Costa Rica.

Once this participatory process has taken place, the specific *sui generis* community intellectual rights for which the communities have requested protection will be inventoried keeping in mind the possibility that others may demand similar protection for TK with the same characteristics. The recognition of these rights in the Registry of the Technical Office of the Commission is voluntary and free of charge. Such recognition must be made *ex officio* or at the request of the interested parties, without being subjected to any type of formality.

The existence of such recognition in the Registry will compel the Technical Office to refuse to accept any intellectual rights on the same knowledge. Such refusal, as long as it is well grounded, may be made even when the *sui generis* right has not been officially recorded.

In Costa Rica a permit issued by the Technical Office of the CONAGEBIO must be obtained in order to access genetic or biochemical resources. This permit is issued for a term of no more than three years and can be extended at the discretion of the Technical Office. Such permits have several characteristics, the key ones being that they:

- Are granted to an investigator or a research center;
- Are personal and cannot be transferred;
- Are materially limited to the authorized genetic or biochemical elements; and
- Can be used only in the area or territory for which they have been specifically issued.

Before the Technical Office grants a permit to access genetic or biochemical resources, it must determine whether the application refers to local or indigenous TK. Costa Rica's law recognizes in Article 66 that local communities and indigenous peoples have the right to deny access to their resources and associated knowledge for cultural, spiritual, social, economic, or other reasons.

The Technical Office is empowered to authorize treaties and contracts signed between local or foreign individuals, or between them and the organizations registered for such purposes for access to genetic and biochemical elements of Costa Rica's biodiversity.



Article 76 of the Biodiversity Law establishes that in the permit through which access to genetic and biochemical resources is granted, the Technical Office will establish the obligation that the interested party donate up to 10 per cent of the research budget and up to 50 per cent of the royalties it charges to the National System of Conservation Areas, the indigenous territory, or the private owner or provider of the components to be accessed. Likewise, the Technical Office shall determine the amount that the interested parties must pay in each case for processing applications, as well as determining any other benefits or technology transfer that may be part of prior informed consent.

Local and indigenous *sui generis* community rights are permanent rights recognized legally in Costa Rica based on the mere existence of cultural practices or knowledge related to genetic and biochemical resources. They do not require a previous declaration, expressed acknowledgement or citation in an official register. Therefore, these rights can encompass practices that in the future will be categorized as such.

Article 86, which deals with “biodiversity education”, expressly states that “the Ministry of Education, in coordination with competent public and private entities, particularly the Ministry of the Environment and Energy, must design formal education policies and programs that integrate the knowledge of the importance and value of the biodiversity and its associated knowledge, the causes that threaten and endanger them, and the sustainable use of its components, in order to promote learning about and appreciation of the biodiversity surrounding each community and to show its potential to improve the population’s quality of life.”

Article 91 regulates the “rescue and maintenance of traditional technologies”, by which the State will encourage the rescue, maintenance, and enhancing of traditional practices and technologies that are useful for the conservation and sustainable use of biodiversity.

Article 104 of the Biodiversity Law regulates everything that encourages improvement of “traditional knowledge”. It establishes that the Ministry of Environment and Energy and other public authorities will promote the conservation and sustainable use of biological and genetic resources that have been selected by local communities or indigenous people, especially those that are threatened or endangered and that must be restored, recovered, or rehabilitated.

## Current status

As part of the obligations arising from the CBD, biodiversity legislation in Costa Rica recognizes the TK by which indigenous people and local communities produce, select, and improve livestock, medicinal plants, crops, and wildlife in general, as well as the valuable approaches of these sectors of the Costa Rican society to conservation and sustainable use of biodiversity.

Currently, in order to comply with Article 83 of the Biodiversity Law, CONAGEBIO is discussing the best way of sharing information and carrying out consultations with indigenous and local communities. It is clear that the consultation process will include the participation of the peasant and indigenous communities, which are located in various parts of the country.

## Notes

<sup>1</sup> The information in this paper has not been updated to reflect developments after the Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovation and Practices, Geneva, October 2000.

<sup>2</sup> Act No. 7788 of April 30th, 1998



# INDIGENOUS RIGHTS AND INTELLECTUAL PROPERTY RIGHTS: BOLIVIA

**Javier Ernesto Munoz Pereyra**

In Bolivia, as in many other South American countries, a unifying ideology based on a plethora of legal regimes prevailed until recently. According to this ideology, authority is the only form of law, and it does not admit any participation or consultation other than that organized by the legislators. Under these circumstances, social practices were not taken into account in formulating laws, many of which were based on foreign legal codes. Consequently, the rights and customs of people could not attain legal validity. In spite of the diverse nature of Colombian society, it was always regarded as a homogenous entity in which there was no room for diverse cultures.

In recent years, efforts have been made in diverse fields such as anthropology, sociology and economics to prepare an informal revision of the law. Efforts are being made to modify the functioning of law, the application of justice, and the formulation of standards in social situations (*Marcha por la Vida*). Contributions made by various fields of science are important vis-à-vis the knowledge of indigenous and local societies and the dynamic organization of their productive activities in the highlands and lowlands. However, much remains to be done to understand the intricacies of life, law, and customs as seen through the eyes of the local communities.

At the international level, the World Organization for Intellectual Property (WIPO) and other international forums have acknowledged the need to appropriately protect the intellectual property rights of the world's indigenous peoples, especially with respect to their traditional culture, knowledge, and innovations.

The members of the Andean Community of Nations (CAN) have resolved to carry out studies in the member States on the intellectual property of indigenous peoples. In this context the Government of Bolivia, through the participation of the Vice-Ministry of Sustainable Development and Environment, the Vice-Ministry of Indigenous Affairs and Indigenous Peoples, the Confederación Sindical Unica de Trabajadores Campesinos de Bolivia (CSUTCB), and the Bolivian Confederation of Indigenous Peoples (CIDOB), signed an Inter-Institutional Pact on February 11, 1998. The objectives of this pact are to:

- Carry out a national study for the protection of the scientific, cultural, and natural heritage of the indigenous people of Bolivia. This will be organized, planned, and executed by the institutions that participate in the Pact.
- Draft a proposal for a bill to regulate the protection of the traditional practices, knowledge, and innovations of the indigenous peoples of Bolivia.

## **National legal framework for protecting traditional knowledge**

### ***Constitutional framework***

The constitutional reform of 1994 recognized for the first time the existence of several cultures and several "cosmological" visions among inhabitants in the history of the republic. It acknowledged the multiethnic and pluricultural nature of the Bolivian State in Article 1. Like the Mexican and Peruvian constitutions, the Bolivian constitution recognizes the importance of the country's indigenous people; however, it goes further and enshrines the inherent ethnic nature of the Bolivian State in its first article. This is of utmost importance as it describes the foundation on which the nation is based. The statement is not a simple declaration of intent but has important regulatory implications, such as giving the nation a mandate for the creation and execution of policies seeking to protect its multiethnic and pluricultural society. The Constitutional Court of Colombia stated its position on the ethnic and cultural diversity of the country by confirming that the constitutional statement was not simply a rhetorical declaration but gave the State regulative powers.<sup>1</sup>

Acknowledgement of the ethnic and cultural diversity in the Constitution implies acceptance of the multiplicity of lifestyles and knowledge systems of the country as being different

from occidental culture. It should be noted that this does not mean that those indigenous groups that still conserve their language, traditions, and beliefs perceive a separate existence from others.

Article 1 of the Constitution decrees that when policies or laws are enacted, the multiethnic nature of the country must be taken into consideration. It is, therefore, now impossible to legislate outside of this constitutional dictate.

### ***Acknowledgement of the legal status of indigenous and local peoples***

As part of the constitutional reforms, specific rights of the indigenous people and their separate legal identity were incorporated into the constitution. Act 1551 of Popular Participation, which established the “legal entity registry procedure”, preceded the constitutional reform. There is now a law that establishes the procedure for registering the legal identity of the indigenous people so that they can exercise their legal rights.

This law enables local and indigenous people and communities to be the actual titleholders of the rights and obligations, not simply as a group of individuals with similar characteristics, but as an actual social entity that has a definite legal existence distinct from the members that comprise it. As a result, indigenous people have become the direct holders of rights and obligations for anything that is or has been produced by the community and that is inherently linked to its identity. Recognizing the legal status of the communities and indigenous people has allowed Bolivia to make substantial progress in transcending the liberal view of an individual being the sole holder of rights and obligations.

Article 171, sub-section (I) of the Constitution recognizes the identity, values, customs, and institutions of indigenous people. It accepts and protects the existence of tangible and intangible heritage of indigenous people.

The concept of community identity is a wide-ranging and holistic one encompassing all of the material and spiritual dimensions that enable a group to identify itself as such and allow its members to be distinguished from other groups.

Until now the heritage of indigenous communities and people was recognized as a national endowment, a traditional and popular culture, or folklore, the creation of an anonymous producer without a title. The new law expressly recognizes the identity of local people; they are no longer anonymous; their heritage, which bestows on them a unique identity, is protected.

### ***Convention 169 of the International Labor Organization and the Protection of the Assets of Indigenous People (Law 1257)***

ILO Convention 169 on Tribal and Indigenous Peoples, ratified by Bolivia in Law No. 1257 of July 11, 1991, is comprehensive in its treatment of the cultural property of indigenous people, and there is no doubt whatsoever that the intellectual property of indigenous people is fully acknowledged.

In Part I of this legislation, several articles address this issue. For example, Article 2 states that the Government must take on the responsibility of developing, with the participation of indigenous people, a coordinated and systematic action plan with the objective of protecting their rights and respecting their integrity. This responsibility includes measures to promote the social, economic, and cultural rights of those people, respecting their social and cultural identity, their customs and traditions, and their institutions. Article 4 states that special measures to safeguard individuals as well as the institutions, assets, work, cultures, and environment of indigenous peoples must be adopted. The term assets covers the heritage of indigenous people, which includes their intellectual rights.

There now exists a clearly defined normative framework, both national and international, for the acknowledgement of the intellectual rights of indigenous people. The generic regulatory framework for the recognition of intellectual property rights of the indigenous people of Bolivia includes acknowledgement of:

- The Indigenous Territories

- Ownership of the prehistoric textiles of the Ayllus of Coroma people
- Return of the Bennett Monolith or the Pachamama Stele to its place of origin, Tiahuanacu

The progress made in developing state policies, as well as in drafting legislation on indigenous issues, is of great significance and is an essential component in the drive to modernize the State within the framework of respect for the traditional rights and practices of indigenous people.

However, Bolivia is now facing the challenge of creating a standard with the consent of different segments of society to protect and respect the traditional knowledge and common practices of its indigenous people.

## Notes

- <sup>1</sup> Constitutional Court of Colombia, Decree T-605 of 1992. Cited by Ciro Angarita Barón. Colombia: *Comunidades Indígenas y Constitución de 1991. En Memoria del Seminario Internacional de Administración de Justicia y Pueblos Indígenas, Ediciones VAIPO, La Paz, 1998, page 96.*



# **STRENGTHENING PUBLIC POLICY FOR A SUSTAINABLE EXCHANGE OF KNOWLEDGE BETWEEN NATIONAL AND INTERNATIONAL INTERESTS: RECENT LEGISLATIVE DEVELOPMENTS IN THE AREA OF TRADITIONAL KNOWLEDGE IN VENEZUELA**

**Rafael Fuentes Niño, Luisa E. Bernal and José J. Contreras**

## **Introduction**

Whenever global issues become local problems, developing countries seem to join yet another “race”, always as latecomers. Traditional knowledge (TK) is one such issue. When a negotiated agreement is not achieved among governments, communities and international enterprises, problems arise, creating unregulated businesses that developing countries cannot stop owing to their weak institutions, lack of enforcement capacity and lack of comprehensive public policy.

Developing countries have to do the analysis and decision making in the area of TK by setting up legislative frameworks and establishing various processes to protect and commercialize their TK within an equitable framework for benefit sharing. In Venezuela, strengthening of public policy-making is achieved through a process of negotiation and participation. This process, called the “agendas”, is an example of finding suitable options for dealing and negotiating within local communities with an international perspective. Agendas involve dialogue on public policy and help to improve links among different components of society, thus empowering grassroots organizations, city governments, small businesses, and the academic community.

This paper briefly discusses recent legislative developments in connection with strengthening of public policy adopted in Venezuela for the recognition and protection of TK.

## **Initiatives of Venezuela for the protection of TK**

Venezuela has taken important legal steps towards recognizing and protecting the TK of its indigenous and local communities. The first step was to acquire a political mandate by amending the Constitution of the Republic of Venezuela adopted in 1999. Article 119 calls for the “recognition and protection of the peoples and indigenous communities, their social, political and economic organization, their culture, practices and customs”. Article 124 of the Constitution guarantees and protects the collective intellectual property rights (IPR) relating to knowledge, technologies and innovations of indigenous and local communities.

On May 24, 1999, Venezuela adopted a Law on Biological Diversity, thus incorporating into the national law the principles of the Convention on Biological Diversity (CBD). The new law is a powerful tool for the conservation of cultural diversity through the recognition and protection of the TK of local and indigenous communities (Article 39). Furthermore, the law recognizes the right of local communities to oppose authorization of collection of genetic material, access to TK, and biotechnology-related plans and projects to be developed on their territory if they are not adequately informed of the uses and benefits expected to accrue from such activities. They can also ask for the cessation of activities that may affect their cultural heritage and the territory’s biological diversity (Article 44). This law establishes an important role for the State in promoting the use of the TK of indigenous and local communities for the benefit of the whole society.

In September 2000, the Andean Community<sup>1</sup> adopted Decision 486 on Industrial Property<sup>2</sup> that has several provisions aimed at protecting the TK of indigenous, Afro-American and local communities. It sets conditions for granting patents that are based on elements of the communities’ heritage and knowledge. Decision 391 of 1996 complements the regional framework, establishing a common regime for access to genetic resources in the Andean countries to

promote fair and equitable sharing of benefits and establish a basis for the recognition and appreciation of genetic resources, their derivatives and related intangible components (including TK).

As significant as these developments are, they still represent only initial steps towards establishing an effective system for the protection of the TK, innovations and practices of indigenous and local communities.

### **The “Agendas”: a process of building a sustainable conservation network**

The “Agendas” are a kind of process of public policy development by which the academic community, government, community leaders, and small businesses have been negotiating and participating in the process of understanding and solving various problems, particularly those involving “knowledge” and technology. Through this mechanism they also seek to establish interactions between the macro, meso and micro levels of the decision-making process.

During the late 1990s, Venezuela had 22 agendas covering topics such as agriculture and environment in the Amazon, environment in Guayana, oceanology, biodiversity, house and human ecology, poverty, oil and plastic, information technologies, and education and health in border states. These processes have yielded a variety of results.

The Agendas focus on the process of transfer of knowledge and culture. They try to create an enabling environment for negotiations and confidence building among the relevant parties. During this process, the various stakeholders explain their interests according to the specific topics being considered, through various sets of tools defined on an ad-hoc basis by the facilitators. The information made available is then analysed within each group of participants in an open workshop to achieve authentic competitiveness, sustainable development, and empowerment of the grassroots organizations, city governments, small enterprises and non-governmental organizations.

The stakeholders go through four phases in the process:

- In the first phase they have intense interaction “participation” in which their problems and interests are made explicit.
- In the second phase, they plan together. This planning is based on information and knowledge they share on how to achieve the established goals.
- In the third, or “appropriation”, phase they make commitments to the project, which may lead to different levels of involvement by them in different time frames.
- In the fourth phase, projects are developed and implemented.

### **Conclusion**

The development and implementation of the Agendas with a wide variety of participants, including transnational corporations, is risky. However, it is also a constructive way to accommodate different interests, levels of knowledge, and culture-transforming processes. It is a way to take into account different interests and to attract investment by establishing transparent processes, rules and practices. This in turn contributes to improving recognition of and respect for the values and practices of our communities, as well as interconnecting macro-, meso- and micro-level institutional issues relating to public policy.

### **Notes**

<sup>1</sup> The Community’s Members are Bolivia, Colombia, Ecuador, Peru and Venezuela.

<sup>2</sup> Régimen Común sobre Propiedad Industrial (Decisión 486).



# PROTECTION OF TRADITIONAL KNOWLEDGE, ACCESS AND BENEFIT SHARING, AND INTELLECTUAL PROPERTY RIGHTS: THE COLOMBIAN EXPERIENCE

María del Pilar Pardo Fajardo

## Introduction

Traditional knowledge of biological diversity can be defined as the ideas, reasoning, methodological processes, explanatory systems and technical procedures developed by ethnic groups and local communities relating to the biodiversity of the environment they live in. This knowledge is collective in nature and is held by such groups and communities as a birthright; it may be written down or communicated between generations orally.

This paper gives the results of a study carried out by researchers from the Alexander von Humboldt Institute and the Biotrade Initiative (UNCTAD) in Colombia. These results may be used by the country to protect traditional knowledge in the context of granting access to genetic resources, which is an obligation set out in Andean Decision 391 of 1996.

The first section of the paper covers the types of legal participation and consultative mechanisms that Colombian traditional communities have available to them to protect their interests and assert their rights; the second section covers the issue of IPRs with respect to traditional knowledge; the third section deals with the important components of a legal proposal to protect traditional knowledge and covers some implementation aspects of Andean Decision 391 on the Common Genetic Resource Access System; the fourth section refers to the work done under the Biotrade Initiative (BI) in Colombia and presents a case in which the work on this initiative has facilitated a sustainable development project; finally the position adopted by Colombia in international fora relating to the TK issue is covered.

## Participation and counsel

The Political Constitution of Colombia recognizes the ethnic and cultural diversity of the nation. In turn, Andean Decision 391 of 1996 defines indigenous, Afro-Colombian or local communities as human groups whose social, cultural and economic conditions distinguish them from other segments of the nation's population. These groups are governed wholly or in part by their customs or traditions or by special legislation, and, whatever their legal situation may be, they conserve wholly or partly their own social, economic, cultural and political institutions. Traditional communities in Colombia have been identified as indigenous, Afro-Colombian, and peasant and/or local.

This paper outlines the legal framework that gives these communities opportunities to participate in legislation affecting them and enables them to assert their interests and protect their rights. Relevant regulations are given in table 1.

It can be seen from table 1 that some legislation protects all these communities, while some groups, like the indigenous peoples, have their rights respected and acknowledged by means of several specific legal instruments.

International Treaty 169 of the ILO was approved and later ratified by Colombia through Act 21 of 1991. This Treaty clearly established the scope of application of its provisions (for details, refer to the chapter by Muñoz Pereyra in this book). It can be concluded that the provisions set out in Act 21 of 1991 are applicable both to traditional indigenous communities and to Afro-Colombian communities.

The Treaty establishes the obligation to adopt special measures in order to safeguard the institutions, individuals, assets, work, culture and environment of the peoples concerned. This obligation involves a special feature, namely endorsement of legal measures by the people concerned before they are adopted.

**Table 1. Legislation on traditional Colombian communities**

Group	Regulation
<b>Indigenous communities</b>	<p><b>Political Constitution of Colombia:</b> Articles 7, 10, 13, 63, 68, 70, 72, 171, 246, 286, 287, 329, 330, 357, and transitional 56.</p> <p><b>Convention 169 of the International Labor Organization (ILO)</b> on indigenous and tribal peoples (Act 21/91). Specifically acknowledges peoples and cultures and creates spaces for participation and consultation.</p> <p><b>Act 99/93:</b> Creates an opportunity for participation in environmental management proceedings.</p> <p><b>Decree 2164/95:</b> Recognizes cabildos (town councils) as administrative authorities.</p> <p><b>Decree 1397/96:</b> Creates the Mesa Permanente de Concertación.</p> <p><b>Decree 1320/98:</b> Establishes the procedure for consultations .</p> <p><b>Decree 1122/99:</b> Clarifies some terms of Decree 1320.</p>
<b>Afro-Colombian communities</b>	<p><b>Political Constitution of Colombia:</b> Articles 7, 63, 70, 72, and transitional 55.</p> <p><b>Convention 169 of the ILO</b> on indigenous and tribal peoples (Act 21/91). Specifically acknowledges peoples and cultures and creates opportunities for participation and consultation.</p> <p><b>Act 70/93:</b> Recognizes collective property and establishes mechanisms for the cultural protection and rights of communities.</p> <p><b>Act 99/93:</b> Creates an opportunity for participation in environmental management proceedings.</p> <p><b>Decree 1745/95:</b> Recognizes community councils as legal authorities for the purposes of expressing opinions in prior consultations.</p> <p><b>Decree 1320/98:</b> Establishes the procedure for consultations .</p> <p><b>Decree 1122/99:</b> Clarifies some terms of Decree 1320.</p>
<b>Peasant and/or local communities</b>	<p><b>Political Constitution of Colombia:</b> Articles 7, 8, 64, 65, 66, 67 and 103.</p> <p><b>Act 99 of 1993:</b> Creates an opportunity to participate in environmental management proceedings.</p> <p><b>Act 160/94:</b> System of Agrarian Reform and Rural Peasant Development.</p> <p><b>Decree 116</b> on rural peasant development.</p> <p><b>Decree 1777/96:</b> Regulates peasant reserve areas.</p> <p><b>Act 472/98:</b> Establishes popular and group actions.</p>

*Source: Institute of Alexander von Humboldt – Policy and Legislation.*

Moreover, the Treaty establishes the minimum parameters that must be taken into account when legal regulations are issued for purposes of recognizing and protecting social, cultural, religious and spiritual practices and values, as well as respect for the integrity of institutions, values and practices.

The following can be underscored from an analysis of each of the instruments listed:

- Indigenous communities have legal tools and mechanisms that protect their rights and interests by means of international treaties, and many of their rights are included in the Political Constitution of 1991.
- The Constitution recognized Afro-Colombian communities as ethnic groups. This gives them an opportunity for concerted action and the right to hold collective title to their lands via legal provisions established in 1993. Act 70 of 1993 acknowledges them as gatherers of plant varieties and/or economic beneficiaries of their development or of knowledge regarding the productive uses of biological resources (Art.54).
- Peasant communities are at a disadvantage in respect of participation and consultation mechanisms.
- In general, the legal constitutional requirement is that that the use of natural resources in the territory of ethnic groups and local communities must not harm their cultural, social and economic integrity.

- There are two international initiatives that must be taken into account as points of reference: Farmers' Rights (FAO) and the UN Draft Declaration on the Rights of Indigenous Peoples.

### Intellectual property rights related to Traditional Knowledge<sup>1</sup>

For the purposes of determining the effectiveness of current intellectual property protection systems as tools for the protection of traditional knowledge, the following parameters must be considered as points of departure:

- Creations of the mind are part of the personal rights of humankind, as they can be part of the freedom-of-thought concept; however, these intellectual expressions are protected through property rights, which, to a certain extent, limit the exercise of these rights .
- Legislation initially divided property rights into two types: real estate property rights and personal property rights. The moment the need to protect the creations of the mind arises, a new type of property is born – intellectual property.
- The rights generated by this intellectual property may have two different titleholders. The first is the author, who will always have moral rights over his creation, and the second is a third party who acquires proprietary rights by means of a legal transaction, for example sale or transfer.
- Intellectual property is a regulatory discipline that protects intellectual creations derived from human effort, work or skill that warrant legal recognition.
- The creations of the human mind, unlike tangible objects, cannot be protected against use simply by possession. Once the intellectual creation takes place, the creator cannot control the use that others make of it. In other words, protecting something in a way other than through the mere possession of an object is what underlies the global concept of intellectual property rights.

**Table 2. Intellectual property instruments in Colombia**

ESTABLISHED LEGAL SYSTEM		REGULATION	
Intellectual property	Copyright	Act 23 of 1982 Act 33 of 1987 Decision 351 of 1993	
	Industrial property	Patents	Decision 344 de 1993 Decree 117 de 1994 Act 173 de 1994 TRIPS/WTO
		Utility models	Decision 344 de 1993 Decree 117 de 1994 Act 173 of 1994 TRIPS/WTO
		Industrial secrets	Decision 344 de 1993 Decree 117 de 1994 Act 173 of 1994 TRIPS/WTO
		Certificate of origin	Decision 344 of 1993 Decree 117 of 1994 Act 173 of 1994 TRIPS/WTO
Other systems	Plant collectors	Decision 345 of 1993 Decree 533 of 1994 Act 243 of 1995	
	Traditional knowledge	CBD/article 8 (j) Decision 391 of 1996, transitional article 8.	

- Existing legal protection systems for the protection of intellectual creations are currently being reviewed, as they have generated much discussion concerning their scope and their effectiveness in protecting inventions that are not industrially developed or applied, such as those generated from traditional knowledge.

The creations of the mind or human ingenuity have been protected in Colombia by different national and international legal instruments listed in table 2

In this paper, each of the components and tools offered by the diverse legal frameworks on intellectual property rights in effect in Colombia will be examined for the purpose of establishing its usefulness in protecting traditional knowledge or simply adopting another type of system that acknowledges the interests of indigenous, Afro-Colombian and peasant communities.

### ***Copyright and TK***

A copyright is born and is the object of protection by legal channels from the moment that the creation of the human mind materializes; in other words, as long as a set of ideas that constitutes a creation is not produced in a way that can be perceived by the senses, the right that its creator has over the produced work does not exist.

Traditional knowledge can be protected by copyright as long as it is brought into being in a tangible manner, and this depends on the strategy adopted by the community interested in protecting its intellectual creations. This system of protection forces others to comply with some of the formalities of western culture.

Indigenous, Afro-American or peasant communities can protect their interests and prevent third parties from making unauthorized use of traditional knowledge by means of:

- A copyright protection system, forcing the usurper of the knowledge to acknowledge the author; and/or
- Use of another type of tool that enables traditional knowledge to be used, sold and/or released into the market and be available for transactions.

Another element that is important to keep in mind is that traditional knowledge is held collectively and there is no clear uniquely identifiable titleholder for whom the copyright system may be used as a property protection system. For this method to be used, it is necessary for the community to establish a legal entity to protect the interests of each member of the community.

### ***Patents and TK***

The option of using patents as a system to protect traditional knowledge is feasible as long as:

- The community is willing to establish a legal entity to see to the protection of the collective interests of the group; this would not generate any problems;
- The object of protection is susceptible to industrial application, i.e. it can be used for productive activities; and
- The invention is new; as explained before, in Colombia absolute novelty is applied, i.e. the invention must not have been known before in any other way.

In general, traditional knowledge has been transmitted orally from generation to generation among the members of the community or by a system for the transmission of knowledge. Novelty is one of the legal conditions for the protection of inventions by the patent system, and an invention is new when it cannot be found in the technical field. The technical field encompasses all that has been accessible to the public in written or oral form, or through its use and/or marketing.

It is worth asking why patents have been issued for components of traditional knowledge in which the novelty condition has not been thoroughly examined, for example the Yaje, although it is important to remember that this happened in the United States, where relative novelty is applied. What can be noted is that this system serves to protect inventions that may result from traditional knowledge.

One of the greatest criticisms of the patent system is that it serves to encourage third parties to patent inventions and innovations belonging to the indigenous communities of developing countries, and in fact this has already happened time and again.

### ***Utility models***

As long as traditional knowledge produces artifacts or objects that are of practical use, utility models can protect them. In this case, it is necessary for the community to establish a legal entity for the purposes of protecting the collective interests of the group so that the benefits produced are shared by the entire community, and for the manufactured article, tool, instrument, mechanism or object to be of practical use. However, it is not likely that utility models could be used as generic tools to protect traditional knowledge, for they are applicable only in those cases where this knowledge produces tangible objects.

### ***Industrial secrets and TK***

The system of industrial secrets is an appropriate tool for the protection of an object derived from traditional knowledge, especially when the object may have commercial or industrial value. The only requirement that could be at odds with traditional practices is the requirement that the knowledge be embodied in an object.

The community that holds the title to the secret can continue using the information to provide benefits for the group, taking due care that it does not become known outside the community itself, for it will retain its special value only as long as its use is restricted.

Industrial secrets may produce benefits for the community as long as its members use them and as long as the required measures to keep them secret are taken effectively. And the way in which a community can defend its rights vis-à-vis third parties is via a legal process through which it can be proven that the secret contains the essential elements embodied in the product/process and that that secret information has been violated by fraudulent actions. The traditional knowledge protected by this method can only be knowledge that can be commercially and industrially exploited.

### ***Certificates of origin and TK***

Traditional communities can use this system to protect products that involve traditional knowledge or that are simply raw materials or semi-processed objects that possess their own characteristics endowed upon them by natural, cultural or human factors. In order to ensure that the rights and interests of a community that intends to protect a product owned by the community are protected, it is essential to establish a legal entity so that the members of the community can receive the benefits that arise from marketing the product.

A product obtained from the use of traditional knowledge and which the community wants to market can be protected by a certificate of origin system, through which both the author and the benefits derived from its marketing are acknowledged. Currently recognized examples include Bordeaux wines and basmati rice.

It is important to underscore that, while this protection mechanism can be a tool in certain cases, it cannot per se provide a system for the protection of traditional knowledge.

### ***Plant variety collector rights and TK***

Traditional communities handle genetic resources indirectly through access to and manipulation of the biological resources. This has been the historical process for plant domestication and production of plant varieties. If a community creates or obtains a new plant variety, it can make use of this tool to protect the rights that arise from the use and marketing of this variety.

In order for the benefits from production, reproduction, multiplication, sale, export, import and possession, among others, to be shared by the community, it is required that the collector certificate be in the name of the whole group, and for this the traditional community must establish a legal entity.



It is important to keep in mind that this protection tool is not a generic tool for the protection of traditional knowledge; it is but one of the options that can be used in cases in which a new plant variety is developed through traditional knowledge. The possibility of protecting these new varieties using the patent system exists, but again, one excludes the other. The choice of the most appropriate protection tool depends on the needs and interests that are to be protected. It is important to keep in mind that it is not possible to protect the same right or intellectual creation with two systems, as expressly stated in Decision 345 of 1993.

## **Policy-related issues**

The National Biodiversity Policy (1997) established strategies and actions related to biodiversity knowledge, conservation and sustainable use in Colombia. In 1998, an Action Plan was developed to implement both the National Biodiversity Policy and the commitments made by Colombia under the CBD.

In the section on recovery, protection and disclosure of traditional knowledge, four objectives were identified. These objectives summarize the country's needs in this area:

- To promote harmonious actions aimed at guaranteeing safety and integrity of possession and to establish social and cultural control by peoples and communities over their territories, environmental services and supply;
- To contribute to the strengthening of identities based on traditional cultural systems that are able to incorporate external elements and reject those that are foreign to them, as well as the development of a collective intercultural awareness of coexistence;
- To establish and implement traditional know-how, knowledge, innovations and practices as an effective exercise of people's basic collective rights;
- To adapt institutional structures – relating to a particular sector or several sectors – and land planning instruments, so that they guarantee and stimulate the intercultural interactions required for the participation of indigenous, Afro-Colombian and local communities in decision-making that affects them, based on respect for their political, social, cultural and economic autonomy.

Currently, the Ministry of the Interior is the entity authorized to look after the interests and rights of traditional Colombian communities; however, the 1998 Action Plan identifies the entities that are responsible for enforcing and promoting these objectives at each level of execution for the purposes of guaranteeing their implementation.

As regards benefit sharing, the Action Plan considers among its objectives:

- Promoting greater justice and equity by establishing adequate grounds for decisions in this field, based on increasingly solid analyses that make it possible to identify the stakeholders that affect or are affected by the management of biodiversity;
- Determining the contributions and impacts of identified stakeholders;
- Assessing costs that may be incurred and equitable sharing of benefits that may be generated from the use of biodiversity.

## **Examples of a legal proposal for the protection of traditional knowledge within the context of access to genetic resources.**

The initiative starts with basic principles by which the proprietary rights of ethnic groups and local communities over their intellectual achievements are recognized, along with the right to make use of them autonomously .

The objectives of the regulation relate to:

- The social purpose of protecting biological and cultural diversity;
- The need to protect and promote intellectual achievements derived from their genetic resources and by-products;
- The establishment of regulations that protect, preserve and strengthen these traditional intellectual achievements;
- Effective participation and prior informed consent (PIC) of groups and communities in decision making relating to access to their knowledge;



- Fair and equitable sharing of benefits derived from the use of these intellectual achievements; and
- Possibilities offered by the diverse protection systems.

The proposed regulation establishes the voluntary adoption by a group or community, of the protection system that it deems most convenient. Three alternatives were considered: (a) a register system; (b) the adoption of existing IPRs; and (c) keeping intellectual rights within groups and communities without having to resort to registry or IPRs. These alternatives are presented below:

**Intellectual achievements are kept within the group or community** and are not registered or placed under any of the modalities of the existing IPR systems, without this constituting a waiver of rights regarding the achievements. As indicated in the proposal, the fact that an intellectual right is not registered does not affect the rights that the community that generated it has over it.

**The intellectual achievement is taken to a Register System.** This registry can be either public in nature or confidential. The system offers two possibilities:

- The intellectual achievement is registered in a declarative manner, with the possibility of serving as evidence if a controversy arises with third parties;
- The intellectual achievement is registered in such a way that it generates proprietary rights. Thus, a group can keep their intellectual achievements or, if they deem it convenient, use them or market them to obtain collective benefits from them, without this requiring any patents or other IPR modes.

The group or community uses the current intellectual property rights (IPR). Registering a piece of traditional knowledge, practice, technology or innovation precludes its protection by other intellectual property systems; i.e. the same knowledge, innovation or practice cannot be protected at the same time by the National Register System and by IPRs.

This may seem extremely broad, but it has the advantage that it enables an ethnic group or local community, in accordance with its interests and capabilities, to adopt the measures that it deems most convenient, and it enables groups and communities to improve their negotiating capabilities and to protect their knowledge, practices, technology and innovations against claims and possible misuse by third parties.

Another advantage is flexibility. A community may change, if it deems convenient, from a declarative register to a register of a fundamental nature, and it may stop using the register systems and change over to the existing IPR systems. In the opinion of the researchers, IPRs have serious limitations for the protection of the intellectual rights of ethnic groups and local communities and should thus be modified.

One of the most complex aspects to be addressed is that of knowledge, practices, technologies and innovations shared by several ethnic groups or communities. The proposal includes an alternative in which first of all the responsibility for resolution of conflicts falls on the ethnic group and community organizations. Second, a panel comprising indigenous, Afro-Colombian, and peasant experts and if needed specialists on the issue can make contributions as a facilitator, but responsibility still falls on the communities concerned. It is foreseen that there will exist wide cultural areas in which intellectual achievements, registers and the possible benefits that may be derived from such achievements will have to be shared, in accordance with the wishes of all groups that share the intellectual achievement or the register.

### **Andean Decision 391 of 1996 on access to genetic resources and their byproducts: Positive and negative aspects**

In Colombia the procedure for securing access to genetic resources entails signing of a contract between the Ministry of the Environment and the party interested in gaining access to the genetic resources, as these resources are part of the national heritage.

In cases where this access involves traditional knowledge, it is required that an annex be signed, which will be incorporated into the contract.

### ***Positive aspects of the access procedure***

When clear rules on how to gain access to genetic resources exist, they can, in principle, guarantee a transparent process for all the parties interested in gaining access.

The issue of access to genetic resources is closely related with the intangible component of TK and IPRs. The Andean Decision creates the opportunities required so that the rights and interests of traditional communities are made known.

With Andean Decision 391 of 1996, we can state that there exists a legal framework to provide access to the country's genetic resources.

### ***Negative aspects of the access procedure***

In spite of the existence of a clear legal framework concerning access to genetic resources, the first contract has yet to be signed, a fact which raises doubts about the efficiency of the regulation.

The procedure has been regulated to the smallest detail, leaving competent environmental authorities with their hands tied in their search for other formulae that respect the interests of parties. Hence, opportunities are being lost due to the fact that actual genetic bioprospection has not been carried out as no contract could be signed.

There also exists an opportunity cost because there is no clear policy on access to Colombian genetic resources. Having such a policy would enable the country to establish the strategies required to increase its scientific and technological capabilities in access activities and increase its capability to add value to such activities. This policy must include legal and economic strategies that support the development of the country. The lack of an enabling policy environment for a strategic area like access to genetic resources may impede negotiations on access contracts.

### **Role and effects of international organizations**

This paper does not intend to give solutions to the problems that arise in the discussions in international fora. It simply expects to show what the discussions are and the impacts these debates may be having, in the adoption of policies and legislation at a national level, on TK, intellectual property and access to genetic resources, including fair and equitable benefit sharing.

It must be mentioned that for the Institute it is clear that the natural forum for decision making on issues concerning TK and ABS is the CBD. The efforts of other multilateral organizations, such as WIPO, FAO, WTO and UNCTAD must be recognized and appreciated, as they generate discussions that give political and technical inputs to decision makers on issues pertaining to biodiversity.

### ***Food and Agricultural Organization of the United Nations (FAO)***

In the FAO, there are three issues that are directly related to TK, ABS and IPRs. The first one concerns farmers' rights and privileges. Article 15 (being negotiated) of the International Undertaking on Plant Genetic Resources Agreement (IU) has suggested global guidelines on the subject. The Humboldt Institute has interpreted these to mean that, in accordance with existing international guidelines, farmers' rights and privileges will only be valid as long as specific policies and strategies are implemented at a national level. In the case of Colombia, Article 26 of Andean Decision 345 on the common system that protects the rights of collectors of new plant varieties recognizes the rights of farmers. Regarding these rights, the protection of knowledge, innovations and practices of traditional communities, the participation of these communities in decision making at a national level, and the fair and equitable sharing of the benefits that they deserve, are provided for in the National Biodiversity Policy and in the Technical Proposal for the Development of a Biodiversity Action Plan (National Biodiversity Strategy). Thus, traditional knowledge and fair and equitable sharing of benefits related to access and use of plant genetic resources for food and agriculture will be taken into account by these

national policy guidelines. As Colombia is party to Decision 345 of the Cartagena Treaty, it can be considered that, generally speaking, the country is regulating the rights of farmers at a national level pursuant to Article 15 of the International FAO Convention.

The second issue refers to the multilateral access system. It is clear that, for those plant genetic resources that are of global importance, a system that guarantees facilitated access should be regulated at the international level, in such a way that the resources can be used for global food safety. However, this access must not be confused with resource property. In Colombia, genetic resources (plant and animal) are considered a national heritage, and thus they are inalienable in nature and cannot be expropriated. This means that there cannot be a seizure of any type and that access must be regulated by the norms established by Decision 391 of the Cartagena Treaty on a common genetic resource access system. Consequently, and if the International Convention is a legally binding instrument, thought must be given to a future review of the Andean Decision to adapt it to these requirements, provided that Colombia, as a part of the Andean Community of Nations (CAN), resolves to be party to the International Convention.

Negotiations in international fora are likely to have an effect on Colombian policy and legislation and lead to a possible change or revision of Decision 391 in the direction of the establishment of an internal system for accessing and using genetic resources. The Ministry of the Environment, through its Legal Division, has started establishing common points between the internal agencies of the Ministry for developing a medium-term nationwide proposal for regulation of access and use of these resources.

The third issue concerns the discussions on the ownership of plant genetic resources for food and agriculture. Until now, these negotiations have not had an impact on the national policy and legislation of Colombia, which are founded on the tenet that genetic resources are not appropriable (Decision 391 and Decision 486<sup>2</sup>) and that living matter that exists in nature and matter that is isolated from its environment are not considered inventions and cannot, therefore, be patented. However, any decision made in the FAO in relation to the ownership of plant genetic resources will without doubt have a significant impact on Colombian policy and legislation in this matter.

### ***WTO Trade-Related Intellectual Property Rights (TRIPS) Agreement***

Colombia believes, in line with FAO, that living matter is not patentable unless it shows evidence of absolute novelty, invention and industrial applicability. Thus for Colombia only biodiversity that has been handled and transformed can be the object of protection by the TRIPS provisions, and not biodiversity in its natural state.

As a matter of fact, Andean Decision 344 on industrial property (now Decision 486) has just been amended to clarify for the Andean Community many of the doubts that revolve around the development of Article 27.3.b. First of all, plants are clearly not patentable; however, those that fulfill the requirements can be protected by new plant variety collector titles. Animals and micro-organisms that are found in their natural state are not to be the subject of protection via IPRs, as is also the case with all essentially biological procedures. Finally, biological procedures that meet the requirements can be patented.

Regarding plant varieties, Colombia is party to Decision 345, a *sui generis* system that fulfills the requirement in Article 27.3.b to protect new plant varieties.

The issue of patentability benefits for inventors and titleholders of biodiversity in general and traditional knowledge in particular is not covered clearly in the TRIPS Agreement. Accordingly, no thought has been given to it in Colombian policies and legislation. What concerns Colombia is that at the patent level or, in general, at the IPR level, no progress has been made in relation to TK. The Colombian National Patent Bureau (Superintendencia de Industria y Comercio) recognizes the importance of the need to give benefits to traditional communities, but no guidelines on how this should be done have been established yet.

### ***Convention on Biological Diversity (CBD)***

Colombia considers the CBD to be the natural decision-making forum for issues related to TK and ABS. While progress has been made in TK matters through the approval of a prioritized work programme, ideas have to develop further. It must also be pointed out that issues relating to community benefit sharing and participation in decision making need to be discussed further, as they touch upon many other interrelated themes. Any decision made in the CBD on development of policies relating to TK policies needs to be taken into account by the Andean Community of Nations, which can formulate regulations in this respect. This means that any decision in the CBD contrary to the Andean countries' national legislation and subregional agreements will affect the regional integration processes that the countries concerned have been trying to strengthen for years. However, there is little danger of this at present with respect to TK, for in this area CAN negotiations are at a preliminary stage. It should be noted that under no circumstances should international guidelines be developed on legislation regarding TK protection without holding consultations and going through a process to develop consensus among the indigenous, Afro-Colombian or local communities that may be affected.

ABS arrangements should be developed within the CBD. However, it should be noted that it is only in fora where no decisions are taken that such issues can be discussed freely, leading to clearer development of appropriate arrangements. At present the decisions taken on ABS issues within the CBD have not affected the existing policies and legislation in Colombia, even though there is need to clarify the relevant sections in Decision 391.

### ***World Intellectual Property Organization (WIPO)***

WIPO started discussions on intellectual property and biodiversity only recently. It has held workshops on TK with the involvement of indigenous communities and is now concentrating on organizing regional workshops to find ways and means to protect such knowledge. It has also created a Committee to work on a regular basis on folklore and knowledge-related issues. In this respect we believe it is appropriate that WIPO is supporting the work carried out by the CBD through these processes. However, it is not considered appropriate that WIPO or any other international organization should develop legally binding provisions concerning the protection of TK outside the CBD.

As for ABS, Colombia began discussions in WIPO on the use of genetic resources in patent applications. This was done due to the fact that it was not clear if certain clauses of the Patent Law Treaty (PLT) would be incompatible with the existing national legislation of Colombia (Decision 391 and Decision 486). To date, this discussion has not had any effect on the national policies and legislation of Colombia due to fact that, as long as it cannot be proven that the PLT leaves room to apply the Andean regulations, Colombia cannot sign the PLT. It must be added that the CBD has expressed the same concern as Colombia regarding the relationship that exists between protection through intellectual property and biodiversity. These concerns were expressed when the CBD invited organizations such as WIPO to analyse intellectual property issues when IPR applications are presented, including patents. Such applications are associated with ABS, including the supply of information from the country of origin of resources if known.

WIPO provided an opportunity during the Inter-Agency Meeting to discuss, besides TK and folklore, issues related to access to genetic resources and biodiversity. However, while this forum should support the work of the CDB, it should not become a platform for decision-making parallel to the CBD.

### ***Andean Community of Nations (CAN)***

Decision 486 on a common system for industrial property rights (which modifies Decision 344) was introduced to ensure that the Andean Community is on a par with current and future developments regarding international legislation on this issue. This Decision took effect on 1 December 2000 and provides Colombia with a significant basis for the development of its international policies regarding biodiversity, TK, genetic resources and IPRs.

Finally, as has been noted earlier in this paper, and based on impressions that the Institute has gathered throughout its participation in diverse international negotiations, one of the regulations that suffers most from this series of discussions is Decision 391 of the Cartagena Treaty on a common genetic resource access system, as it encompasses the three study topics, and in such a way that it could be problematic for many States.

As observed in the discussions that have taken place in FAO, the CDB, WTO and WIPO, any decision made has a direct impact on this Andean regulation, and more so than any other internal regulation or policy of Colombia. In this sense, the decisions that are being taken under FAO's International Undertaking on Plant Genetic Resources (IUPGR) can precipitate a review of the decision taken under the Andean regulation. There are several key points that must be studied when the discussions start, and account should be taken not only of the FAO negotiations, but also of all the negotiations that have been mentioned in this document.

- Decision 391 must provide for, within its genetic resource access system, a complementary system that focuses on officially approving the criteria of the multilateral facilitated access system for TK (which has also been recognized by the CBD). In this case, it is necessary to determine whether this type of access is going to be granted for the specific crops listed by FAO, or if it is going to be broadened.
- The implementation of Article 8 on TK associated with access to genetic resources must be reviewed. In this respect, the results of the Institute's preliminary research should be taken into account.
- In relation to complementary provisions 2 and 3, it is necessary to check that the provisions requiring that the national patent bureaus request the numbers of the access contracts are clearly classified as substantive or formal, and that they are in accordance with the new stipulations of both the CDB and Decision 486.
- Finally, it is necessary to review the concept of access to genetic resources itself, as currently the text is so ambiguous that the country members of the CAN have interpreted it in several different ways. This has in turn influenced the ease or difficulty experienced in granting access permits in each of the Andean countries.

### **The potential impact of negotiations on trade and investment in biodiversity in Colombia in relation with TK, ABS and IPRs**

In organizations such as FAO, issues are being discussed that are close to sectors such as the food, agricultural and seed industries, among others.

In respect to WTO, it can also be said that a *status quo* exists due to the delays that have occurred in the Millennium Round. However, it can be clearly seen that there are issues that must be addressed from the perspective of the effect they have on national biodiversity trade and investment, as in the case of the development of TRIPS. It is important to keep in mind how certain provisions may positively or negatively affect the marketing of biological products or procedures developed by traditional communities (whether indigenous, Afro-Colombian or peasant). It is necessary to ensure transparent commercial transactions and respect for the knowledge of indigenous people. Accordingly, communities that make use of biodiversity must participate in international decision-making processes. It is clear not only that work should be carried out with the communities to provide them with protection for their knowledge, but also that opportunities must be provided for the placement of their products.

In the case of the CITES, the need to establish stricter control mechanisms to legally regulate trade and investment in biodiversity is evident.

The CBD, through its objectives (conservation, sustainable use, and fair and equitable benefit sharing), provides bases that at first seem simple but have proven most difficult to put into practice and can have an impact on national trade and investment. It has been seen that in Colombia conservation (the main objective of the CBD) in many instances is not profitable, because the Government has not developed and implemented enough aggressive mechanisms or policies to encourage conservation. Regarding sustainable use, it is clear that the institutional capacity at the local level is not sufficient to stop certain actions such as the overexploitation referred to above. In addition, a basic component of sustainable use, namely



education and awareness, has not reached the indigenous communities, which are the ones that use biodiversity resources most directly. Finally, fair and equitable sharing of the benefits derived from access to biodiversity, and especially genetic resources, is an extremely sensitive issue since, although there exists an Andean regulation in the form of Decision 391, it is very difficult to secure the basic requirements necessary to achieve a good distribution of benefits, such as the control and monitoring of sample gathering for purposes of genetic prospection. In addition, it is much easier and less expensive for a person to access samples illegally (what is more damaging is that such access may go unnoticed) than to have to present an access contract to the Ministry of the Environment and agree to “share” the benefits with the State or the communities. It is clear that greater efforts must be made to create negotiation systems between the private sector and communities, where the latter can protect their knowledge and, at the same time, optimize their monetary and non-monetary profits, in such a way that in the long run all participating parties benefit.

Taking all of this into account, it must be mentioned that divergent positions, be they environmental or commercial, can often have an impact on international negotiations and thus affect national policies and legislations. However, an appropriate balance between commercial and environmental decisions may result in a maximization of social benefits. An interesting case to mention is voluntary certification, which, while being a market tool, is also a conservation tool. Its advantages are the following: it involves systems that are adapted to the realities of the country; it is voluntary; it can handle overpricing; it gives the product a distinct identity that enables it to enter into niches in new markets, which also results in a good image; it guarantees conservation and the sustainable use of forest-rich areas and biodiversity due to the management plans that are carried out; and it reduces environmental risks.

However, it cannot be ignored that there are risks and obstacles in agreeing to voluntary certification, such as incomplete information, the difference between the financial and technological capacities of developed and developing countries, and the difficulty in guaranteeing appropriate sharing of benefits and access to the market due to the variety of stakeholders and the imbalance that exists in their capacity to agree to technical or productive changes.

## Notes

- <sup>1</sup> Since it was prepared for an Expert Meeting, the paper does not cover the requirements and conditions of each IPR mechanism and tool .
- <sup>2</sup> Which modified Decision 344 of the Cartagena Convention on a Common Industrial Property System.



# ***SUI GENERIS* LEGISLATION AND PROTECTION OF COMMUNITY RIGHTS IN AFRICA**

**J. A. Ekpere**

## **Introduction**

Members of a typical local community in Africa view the world in which they live as an integrated and complete whole. Their world-view reflects their beliefs, innovations, technologies and practices and other forms of cultural expression that they have developed over generations. Their songs, stories, music, paintings, agricultural and industrial production implements and gadgets as well as other forms of expression are important components of their knowledge systems, power and identity. It has been suggested, therefore, that any attempt to subdivide this holistic characteristic of local communities into separate legal categories such as cultural, artistic and intellectual, or into composite elements such as songs, stories and sacred sites is inappropriate and unacceptable. All elements of a local community should be protected as an interrelated and integrated whole.

The traditional knowledge (TK), aggregated innovations and practices of a local community constitute both a national heritage and a national resource that should be protected, developed, promoted and, wherever appropriate, conserved.

The Organization of African Unity (OAU) subscribes to the desirability of protecting the rights of local communities to their knowledge, innovations and practices. The organization enjoins its Member States to develop legal instruments consistent with their national objectives and sociopolitical and economic policies to protect their local communities' intellectual property rights (IPR). There is a general opinion that the current IPR regime cannot protect traditional and indigenous knowledge. At the same time, there appears to be considerable hesitance to create new *sui generis* systems that could protect TK. The OAU is not against IPR, and it recognizes the need to protect TK, but it questions the appropriateness of protecting IPR through a patent system.

The OAU Model Legislation for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources, is an effort to develop appropriate *sui generis* legislation to protect the rights of local communities, their knowledge, innovations, technologies and practices. The model legislation sets out a broad framework for the protection of community rights, the rights of farmers as individuals within a community and breeder's rights in compliance with Article 27.3 (b) of the Agreement on Trade-Related Aspects of Intellectual Property Rights (the TRIPS Agreement).

This synoptic discussion paper will highlight the basic aspects of the process in developing the model legislation along with the implications of its adoption and use in the Nigerian situation.

## **The concept of traditional knowledge**

TK is sometimes defined as a body of knowledge built upon by shared values and aspirations of a group of people living in close contact with nature through generations. It encompasses a system of classification, a set of empirical observations about the local environment and a system of self-management that governs resource use. In its true conception, TK is a living and evolving tradition. Its continued practice is vital to the identity and cultural survival of the local communal life support system. Any attempt to define or understand TK must recognize its:

- Holistic nature
- Mode of transmission
- Communal ownership and collective intellectual property construct

- Responsibility and custodianship to ensure true conservation and effective transfer from one generation to another
- Non-fixation in a time frame and
- Belief in re-creation, which is real, rather than re-production, which is considered unreal.

In this context, “traditional” does not imply “outdated” and “retrogressive”. What is traditional about TK is not its antiquity but the way TK is acquired and used. Known for centuries in local communities for its utility, TK is acquiring new importance in modern times. Currently, it is a source of useful information for the achievement of sustained development. However, the inability or refusal of modern society to protect this knowledge poses a great danger to the survival of local communities and indigenous people. The ongoing drive to privatize all knowledge through IPRs threatens to usher in an age of “secret sciences” with all its inherent dangers. Most international agreements refuse, or are unable to deal with, TK systems. At another level, the inability of society to develop a coherent policy on this issue has led to frustrations and decay in TK. The efforts by the World Intellectual Property Organization (WIPO) and the United Nations Conference on Trade and Development (UNCTAD) are, therefore, commendable.

### **The Organization of African Unity**

Africa is economically the least developed continent in the world, yet probably it is the most endowed in terms of natural resources. The continent is particularly rich in biological resources, with a crop and medicinal plant diversity the value of which is yet to be studied, discovered or quantified. The effective utilization of this resource base at the local level is predicated on extant TK.

Africa has maintained, conserved and nurtured its biological resources through generations of local and indigenous (traditional) communities – particularly through the activities of farmers, hunters, fisher folk, women and local healers, whose livelihood depends almost exclusively on these resources. They have cared for the critical balance of the ecosystem and their biological resources in the interest of their own survival.

While there has been general agreement on the need to conserve and sustainably utilize available biological diversity for the benefit of all humanity, it is disheartening to note that there are countervailing forces bent on appropriating the rights of local communities, indigenous people and sovereign nations through the IPR system. This covert attempt to appropriate without consent or compensation is endorsed in international agreements and has major implications for national and regional food security, agricultural and rural development, and health and the environment. For Africa, “classical” IPR on biological diversity have profound implications, apart from their conflict with the basic tenets of the Convention on Biological Diversity (CBD).

The new GATT (General Agreement on Tariffs and Trade) accord, which established the World Trade Organization (WTO) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), obliges its member states to adopt either the patent system, or a *sui generis* system, or a combination of both to protect new plant varieties. TRIPS seems to formalize the trend in which IPR confer private, individual and exclusive ownership of life forms. On the other hand, the CBD recognizes the role and achievement of local and indigenous communities in the conservation of biological diversity and considers biological resources as a proper domain for establishing and ensuring collective community rights.

Therefore, in order to prevent the misappropriation of TK, innovations, technologies and practices of local communities associated with their biodiversity, as well as to establish equitable benefit-sharing arrangements. What is urgently needed is an appropriate system for legally securing the rights of local communities and peoples.

Recently the OAU, through its Scientific, Technical and Research Commission, targeted the problem of ownership, conservation and utilization of Africa’s TK. This concern was expressed in Kampala, Uganda, during the fifth OAU/STRC Meeting of Experts and Symposium on Traditional African Medicine and Medicinal Plants (Mshana, Nduyet and Ekpere, 1996). In April 1997, the Commission held a joint workshop, Medicinal Plants: Policy Issues on Owner-

ship, Access and Utilization,<sup>2</sup> to chart a course of action to address the concerns expressed at the Kampala meeting. The workshop recommended, among other things, that

“The OAU/STRC should initiate and co-ordinate the process of drafting a model law on the protection of traditional knowledge on medicinal plants”.

The second demand for the OAU initiative came from a group of African Government negotiators, scientists, non-governmental organizations, and community-based organizations that have been working (outside of the OAU/STRC) to develop a common negotiating position at the various forums dealing with biodiversity (the CBD, the FAO, the Biosafety Protocol to the CBD, etc.). They have also been monitoring the implementation of the TRIPS Agreement.

The above two groups found common ground for collaboration in response to the mounting pressure on developing countries in general, and Africa in particular, to comply with legally binding agreements of the CBD and the WTO. At the April 1998 meeting of both groups in Addis Ababa, draft legislation on community rights and access to biological resources, was discussed and adopted as the African Model Legislation (AML). The draft model legislation was discussed and adopted by the 68<sup>th</sup> Ordinary Session of the Council of Ministers of OAU held in Ouagadougou, Burkina Faso, in June 1998.

The AML is an effort to put in place a *sui generis* system for the protection of the rights of local communities, farmers and breeders and for the regulation of access to biological resources. It provides Member States of the OAU with a framework for the formulation of law relevant to their national interests and to the protection of TK and new plant varieties. Most of Africa has opted for a *sui generis* system, arguing that other protection systems are very similar to that of industrial patents set up for developed countries where the indigenous community represents less than 1.5 per cent of the population. The OAU Model Legislation on the regulation of access to biological resources is now the basic instrument that enables Member States to formulate their national laws in accordance with their economic development objectives, political orientations and national interests.

### ***The process and its outcome***

The OAU initiative has been implemented through a series of workshops, participation in related seminars and information sharing with like-minded individuals and organizations. In all these workshops and information exchanges, the emphasis has been on coordinated interaction with government institutions and officials, civil society and other stakeholders. The interactions and subsequent implementations have been principally through dialogue and consultation. The process, understandably, was arduous and slow, but it was also thorough and efficient. It has resulted in a better understanding of the underlying issues and in support from a large cross-section of the African community.

### ***Core concerns of the Model Legislation***

The core concerns of the African Model Legislation can be found in the following basic principles enunciated in the text:

- **Food security:** Africa’s access at all times to food for an active and healthy life is currently provided through small farmers employing traditional practices such as rain-fed farming, multiple cropping, and crop selection through the use of farm-saved seeds. For most communities, locally produced biological resources provide over 95 per cent of the food they need to survive.

The Model Legislation aims to promote the conservation of TK and local biodiversity, related technologies, innovations and practices, food security as well as community rights over their biological resources and knowledge. It balances farmers’ rights against breeders’ rights and thus ensures that farmers are able to save and exchange seeds and, where necessary, produce farmer-certified seed. The Model Legislation acknowledges seed security as a prerequisite for the region’s long-term food and livelihood security.

- **Sovereign and inalienable rights:** Both the Rio Declaration on Environment and Development (1992) and the CBD recognize the sovereign rights of States, their responsibility to use their biological resources sustainably, and the importance of access and the equi-

table sharing of benefits derivable from these resources. National legislation needs to define and guarantee communities' rights to and responsibility for their traditional heritage. Such guarantees would be consonant with the relevant article of the CBD and the revised section of the Food and Agriculture Organization's International Undertaking on Plant Genetic Resources. It also protects local communities from the vagueness of TRIPS. The individual-based system is alien to the African culture and lifestyle. Local communities are the custodians of their biological resources, innovations, practices, knowledge and technologies, which are governed completely or partially by their own customary laws, written or orally transmitted.

The African Model Legislation is based on the principle that the knowledge, technologies and biological resources of local communities are the result of the tested practices of past generations. These resources are held in trust by present generations for future generations, and no one has the right to create exclusive rights over them. Community rights are inalienable, and the State has a responsibility to protect such rights. The Model Legislation rights of local communities, recognized in a special section on community rights, are particularly important to protect Africa's abundant multi-ethnic character, rich culture, biological heritage and TK. The United Nations has also recognized community rights and has recommended that States do so as well. Indeed, some countries are incorporating collective rights into their national legislation.

- **The Importance of Community Knowledge and Technology**

The CBD recognizes biodiversity as the basis of the livelihood of millions of people around the world. Biodiversity provides the ingredients for our food, medicine, shelter and overall comfort. Erosion of biodiversity threatens the very life support system of all humans.

The African Model Legislation gives OAU Member States an opportunity to protect their biodiversity and associated knowledge and technologies. Its key themes are:

- **Participation in decision making.** Convention 169 of the International Labour Organization (ILO), adopted on June 27, 1998, recognizes the right of indigenous peoples to decide their own development priorities. Interpreted in the context of the local communities of Africa, the Model Legislation ensures the effective participation of affected communities in the regulation of access and the sharing of benefits accruing from the utilization of their biological resources, knowledge, technologies and practices.
- **Regulation of access to biological resources:** The current trend towards privatization, commercialization, bioprospecting and biotrade could erode local systems of obtaining a livelihood, systems now based on biological resources. In the absence of appropriate regulation, local communities will forever be on the losing end. The Model Legislation provides a system for regulating access subject to the prior informed consent of the state and the concerned local community.
- **Fair and equitable sharing of benefits.** The Model Legislation recognizes benefit sharing as a right of local communities consistent with the basic tenets of the CBD. The legislation stipulates that a specific percentage of any financial or non-financial benefit be shared with the local community.

The Legislation is unique in its enunciation and amplification of the African countries' shared position of "no patents on life forms". It also acknowledges the pivotal role of women in the conservation of biological diversity and supports gender equality in decision-making.

## Implications for Nigeria

At the time of this writing,<sup>1</sup> Nigeria did not have a legal instrument for appropriately protecting TK. The country should therefore commit itself, in collaboration with other stakeholders, to developing a concrete plan of action to ensure that TK will continue to serve the needs and aspirations of local communities. Appropriate legislation is now needed to ensure equity and benefit sharing among all stakeholders. The OAU Draft Model Legislation provides a *sui generis* option on which Nigeria could base such legislation.

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## Notes

- <sup>1</sup> November 2000





# REGULATING BIOPROSPECTING AND PROTECTING INDIGENOUS PEOPLES' KNOWLEDGE IN THE ANDEAN COMMUNITY: DECISION 391 AND ITS OVERALL IMPACTS IN THE REGION

Manuel Ruiz Muller

## Introduction

The Convention on Biological Diversity (CDB) has intensified national and international debates on bioprospecting, access and benefit sharing (ABS) of genetic resources, traditional knowledge (TK), and intellectual property rights (IPR) as they relate to biodiversity. These debates in turn have yielded a wide range of political, ideological and legal positions.

In this general context, Decision 391 of the Andean Community on a Common Regime on Access to Genetic Resources has become an important landmark for international law and policy development regarding ABS, and for the protection of TK and IPR.<sup>1</sup> It establishes a legal framework for bioprospecting in the Andean region that seeks to ensure that the benefits derived from ABS-related activities are shared with the countries from which genetic resources and biological materials are collected.

The idea of a regional regime was first discussed in 1993, and three years later, in 1996, Decision 391 was approved. It has continued to influence numerous ABS regulatory processes worldwide and has become a very useful instrument for identifying key policy and legal issues related to bioprospecting.<sup>2</sup>

The Andean regime was developed in a context in which CBD and ABS principles were the main available guidelines for orienting national policy formulation and designing of the accompanying regulatory processes. Contemporary law and legal doctrine offered little assistance on the subject at the time.<sup>3</sup> Furthermore, during that period tensions between “biodiversity-rich” but technologically poor countries and industrialized but “biodiversity-poor” nations were at their peak. National and regional politics were influenced by diverse issues related to:

- Expectations of high economic benefits and returns associated with, and overall inequities in the flow of, technological and genetic resources;
- How IPR operated; and
- How the economic benefits resulting from these flows were distributed between developed and developing countries.

The following discussion: reviews the genesis of and rationale for Decision 391; assesses its implementation process in the Andean region as well as some related issues such as TK and IPR; and, most importantly, evaluates its overall impact on and implications for bioprospecting activities since its formal adoption in 1996.

Additionally, recommendations are presented specifically, but not exclusively, for national decision makers to help them in implementation and modification of Decision 391.

The discussion is based on the premise that bioprospecting, if addressed in a strategic manner, with the medium-term perspective in mind, can provide biodiversity-rich countries with a wide range of benefits which could:

- Stimulate development;
- Strengthen scientific research capabilities and provide national scientists with training and equipment;
- Offer significant business opportunities; and
- Provide indigenous communities with adequate compensation for the use of their resources and knowledge.

## **The policy and legal background for Decision 391**

In 1992 the Andean Community began a process for developing a regional mechanism (similar to the International Union for the Protection of New Varieties of Plants, or UPOV) to promote and protect plant breeders' rights (PBR). In 1993, ABS issues were first raised in the Community during the negotiations for a regional system to protect the rights of plant breeders.<sup>4</sup>

It was in the context of IPR deliberations that private rights (PBR) were considered for the first time over components of biodiversity at the national and regional levels. At the same time, parallel negotiations were held to modify the regional Industrial Property Regime (Decision 344) and, in particular, extend the scope of patent protection over biodiversity components, specifically over biotechnological products and processes for which limited protection was available at the time.<sup>5</sup>

Some participants involved in developing Decision 345 questioned the need for a PBR system in the region, asking who would be the main beneficiary of such a system. They inquired what impact Decision 345 might have on conservation of biodiversity. It was proposed that ABS issues be included in discussions, taking into account that plant breeding activities in the region or abroad would almost surely access and make use of the rich genetic diversity in existing in member States to develop plant varieties and enhance breeding processes.<sup>6</sup> These concerns resulted in the incorporation into Decision 345 of a Third Temporary Provision that called for the establishment of a Common Regime on Access to Genetic Resources in 1994, as the Andean member states shared common biodiversity within their region.

Forming a cartel-like bloc<sup>7</sup> where countries would design a system to cooperate and ensure that all benefited alike from access to and use of genetic resources, seemed the best alternative to prevent members from initiating a price war over the use of shared resources, so that ABS did not undermine common interests.<sup>8</sup>

Entry into the CBD and general enthusiasm for its potential played a pivotal role in stimulating the formation of a political scenario supportive of novel regulatory initiatives to implement its ABS provisions. In this context and with the legal mandate derived from Decision 345, the Andean Pact requested technical assistance from the Environmental Law Centre of the World Conservation Union (IUCN) to promote a regional process to develop an ABS regulatory framework and provide the Pact with the basic legal elements for such a framework.<sup>9</sup>

### ***The Legal status of genetic resources, access restrictions and protection of TK***

The four critical related issues at the core of initial discussions of Decision 391 were the following:

- Should the regime first address biodiversity conservation and protection measures and only thereafter discuss the ABS issues?
- What was the legal status of genetic resources in the region and, therefore, what were the rights and role of the state?
- Should the system focus on strict control of access to and use of genetic resources, and, if so, how to achieve this? Or should it instead regulate more flexibly the flow of these resources?
- What were the rights of indigenous people over their knowledge, innovations and practices related to biodiversity? Should ABS address this, and if so, how?

The regime should initially focus on conservation of resources and protection of TK, and later address the issue of ABS. The regional regime was essentially a system for regulating trade flows of genetic resources, and although conservation and TK knowledge issues were very important, they could not be at the core of the system, as other regulations, many already in force, could deal with conservation issues per se.

## **Critical issues in the development of Decision 391**

### *The North/South debate*

The debate on Decision 391 was grounded in an overly simplistic view of an inevitable North/South conflict of interests. This subsequently steered the discussions towards the need for a system to strictly control the flow of genetic resources from the region to industrialized countries.

The negotiations received inputs from a wide array of public and private institutions, experts, indigenous peoples' organisations, non-governmental organizations (NGOs), inter-governmental organizations and others. In regional discussions, much of the debate was polarised.

The concept of "biopiracy" (see Box 2) played an important role. The concerns were reflected in clear policy options and a statement designed to ensure that member States had control over genetic resources in order to prevent such piracy. TK and IPR were covered as part of the general concern over ABS.

### *Data and information limitations*

During the development of Decision 391, limited hard data and information were available on global genetic resources and products derived from them, their trade flows and the nature of their markets. Experts had to contend with a lack of verifiable information on the origins, sources, uses, and nature of genetic resources.

This resulted in overestimation of the potential benefits from bioprospecting, which became a key driving force for conservation and sustainable use of biodiversity in the region, and a source of potential monetary benefits for countries.

## **A critical overview of Decision 391**

### **General orientation**

Decision 391 seeks to ensure that access to and use of genetic resources from the Andean region is controlled. It recognizes that the state is the key stakeholder in the underlying administrative processes and a leading party to the main access contract. The state should, therefore, bear the responsibility for ensuring that this expectation is met.

The strict control orientation of Decision 391 is evident in its general scope and its definition of access (as encompassing *all* activities that require access to and use of biological materials) and the legal treatment given to *ex situ* conservation and research institutions (see Section VI of the Decision).

The main problem in implementing the Decision arises when a common procedure is applied to different types of bioprospecting activities. If the ensuing regulatory regimes are not flexible, then it will be difficult to accommodate different forms of bioprospecting. In practice, there will be significant differences among, respectively, bioprospecting for marine resources, bioprospecting for microbial resources, searching for new genes in agro-biodiversity, and seeking novel biochemicals for pharmaceutical purposes. Taxonomic research based on genetic analysis would probably require specific and different rules.

### **Objectives**

Decision 391 regulates access to genetic resources of member States (and their derived products) with a view to:

- Establishing conditions for a just and equitable participation in the benefits generated from access;
- Establishing the basis for the recognition and valuation of genetic resources and products derived from them as well as from the intangible components of such resources, particularly those residing with the indigenous communities;

- Promoting the conservation and sustainable use of biodiversity;
- Promoting the development and enhancement of local, national and regional scientific, technical, and technological capacities; and
- Strengthening the negotiating capacities of member States.

The critical question, then, is: Do the provisions of Decision 391 actually promote the achievement of these objectives? *A priori* and in light of the current stage of its implementation process (see the next section), it could be argued that the Decision has as yet not fulfilled its role in achieving these objectives. Various reasons for this will be given later in this discussion. At the time of writing, almost four years after its enactment, Decision 391 had not been implemented in Ecuador, Peru and Bolivia,<sup>10</sup> and there had initially been controversy surrounding its implementation in Colombia and Venezuela.

### Box 1. Summary of the access procedure in Decision 391

**Step 1.** Review general minimum conditions for access (Art. 17) to be included in the application and/or access contract.<sup>11</sup>

Conditions could include, for example, terms of transfer of materials to third parties (see final paragraph above), submission of research results, support for research on the conservation and sustainable use of biodiversity, or participation of member State nationals in research activities.

**Step 2.** Submit an access application to the competent national authority (Art. 26).

**Step 3.** Sign an accessory contract (between the applicant and the *ex situ* conservation centre, or the owner or possessor of the land where biological resource is located, or the owner or possessor of the biological resource, or the national support institution) (Art. 41),

And/or

An accessory contract (or Annex) between the applicant and the provider of the intangible component (knowledge, whether from an indigenous community or not) (Art. 35).

**Step 4.** A competent national authority and the access applicant sign the access contract. All other contracts are subject to the results of the access contract negotiations (Art. 32). The state will take into account the interests of the providers of the biological resources and the intangible component (Art. 34). All accessory contracts will enter into effect only once the access contract has been signed (Art. 42).

Access by research and *ex situ* centres

**Step 5.** If bioprospecting is to be carried out by universities or recognized research institutions and researchers, and if it involves multiple access activities, a framework access agreement must be reached with the competent national authority (Art. 36).

**Step 6.** If *ex situ* centres or other institutions seek to carry out access-related activities, they must sign an access contract with the competent national authority. The competent national authority may sign access contracts with third parties who seek to access resources deposited in these centres of which member States are countries of origin (Art. 37).

**Step 7.** The National Competent Authority may sign deposit, administration and intermediation contracts with universities or recognized research institutions and researchers (Fifth Complementary Disposition).

### Access procedure and constraints

In terms of the overall access procedure (see Box 1), Decision 391 presents conceptual and practical challenges. The complexity of the recommended procedures, particularly the contractual negotiating process as applied to all types of bioprospecting activities and the number of supporting individual contracts that could be required, would certainly affect the viability of promoting research and development projects.

To an extent, this characteristic is in turn related to the role of the state as a dominant party in defining the access procedures in its effort to exercise its sovereign rights. It is the state that needs to exercise maximum control over its resources. Parties other than the state have to act within the confines of the prescribed administrative procedures and are obliged to accept a state-negotiated and -approved access contract. These access contracts (Box 1) set the parameters for negotiations with regard to the use of biological resources over which only the state has rights.

Transaction costs can become a burden for implementation in light of the model/referential access contract proposed in Resolution 415 of the Andean Pact (adopted on July 22, 1996). These transaction costs do not provide ideal incentives for potential collaborations and bioprospectors. This resolution stipulates that without the consent of the National Authority an applicant cannot give genetic material to third parties. The pros and cons of this can affect future investments related to research. In addition, there are a few other vexed issues in Resolution 415. Its clause d(9) establishes that the applicant must ask the National Authority for authorization for the removal and transport of the collected samples outside the collecting site. It seems rather obvious that most, if not all, research will occur *outside* collecting sites or areas. Clause e(5) of Resolution 415 states that an economic guarantee should be established to indemnify the state in case of non-compliance with agreed commitments and obligations. This last condition has probably influenced the regulatory process in Ecuador, where a recent draft regulation to implement Decision 391 stipulated that applicants should leave a deposit equalling 100 per cent of the total project budget as an economic guarantee.

### **The role of the State: The Law and practical realities**

Constitutional provisions of the countries of the Andean Community regarding access to and use of natural resources stipulate that both renewable and non-renewable resources (specifically the wild and non-domesticated forms) are under state control.

In accordance with member States' national constitutions, Article 6 of Decision 391 recognizes that "genetic resources or their derived products of which Member States are countries of origin, are goods or patrimony of the Nation or State of each Member State..." With regard to the exact legal meaning of this provision, it can be argued that the provision does not necessarily mean that the state has property rights over genetic resources, but rather that it is a regulatory power seeking to ensure that these resources are used in accordance with the national interest.

However, the *ratio legis* of this Article, as expressed during the drafting of Decision 391, is that the state has and retains property rights over genetic resources in all circumstances. Furthermore, the second part of Article 6 determines that these resources are non-transferable; are not subject to confiscation, seizure or prescription; and are independent from the legal regime applicable to the biological resources that contain them.

Article 6 makes a distinction between the legal status of genetic resources (under state domain) and the legal status of biological resources in which the former are physically found. In this regard, biological resources and genetic resources do not have the same legal status, nor are they subject to the same legal treatment in all cases. This is an important conceptual distinction that has an obvious bearing on the access procedures and contract negotiations (see Box 1). It would also seem that, even in the case of domestic, non-wild biological resources, the state would have rights over their genetic constitution.

Member States have legitimately chosen a legal option to separate the status of biological and genetic resources based on a series of considerations. Some of these are:

- Strong emphasis on the principles of the permanent sovereignty, national patrimony and goods of a nation
- Market structures in which procurement and distribution mechanisms are still weak and therefore state intervention is required
- Public choice to ensure that, through the state and its direct participation in monetary benefits, the public interest can best be served.<sup>12</sup>



This situation contrasts dramatically with the situation of countries with a common law tradition (such as the United States), where all natural resources (in most circumstances) belong to the owner of the land on which they are located.<sup>13</sup>

Although for Andean countries Decision 391 provides a sound conceptual approach to defining regimes for biological and genetic resources, taking into account the actual physical nature of genetic resources as a source of coded information, some practical constraints in applying the “property of the nation” theory become apparent:

- It implies a series of different contracts for those involved in a bioprospecting project in research and academic institutions. This increases time, costs and bureaucracy and requires increased institutional capacities.
- If only the state has rights over genetic resources, from which most of the potential benefits are to be derived, there is no real incentive for the owner, possessor or administrator of the biological resource or land to actually conserve these resources. Given the governmental structures prevailing in the member States, it seems highly unlikely that benefits derived from the genetic resources will flow back to these stakeholders as compensation for their conservation effort and, therefore, act as an effective incentive. Basically, what will be negotiated through an accessory contract is a payment for the provision of specimens or parts thereof. Article 34 does indicate that “Access contracts will take into account the interests of the [physical] providers of the genetic resources”.
- The appropriation of genetic information presents a serious problem with regard to the question: How can property rights over genetic information be assigned and fully exercised? Unless protected as a form of intellectual property,<sup>14</sup> all genetic information contained within the biodiversity of a country presents itself as a non-rival and non-exclusive good in the sense that the use by one person does not limit the possibilities of use by others. In addition, it is very costly to exclude other users. This aspect is closely related to the economics of information theory and the practicalities of physically restricting access to genetic resources.
- If genetic resources were essentially conceived as information, countries would need to develop an information rights system, which would in some way ensure that use is subject to certain restrictions and that benefits can be captured. Decision 391 presents a critical problem regarding the nature and essence of genetic resources (including size, informational features, and almost infinite diversity) *vis-à-vis* the practical implications of applying and enforcing property or domain rights over them.
- At the core of the ABS debate lies the issue of ownership of biological material and potentially valuable genetic resources, which has political implications. It is important to note that these materials, unlike any other natural resource, can be obtained fairly easily by anyone, at any place where they occur, and at any time. Unless large supplies of materials are required continually for research and development processes, access to and use of these resources can go unnoticed. Regulations need to acknowledge that it is impossible to physically control most movements of biological materials. Rules therefore need to be developed that will encourage interested parties to comply with them rather than choosing easier options such as seeking access elsewhere, obtaining materials from other sources such as botanical gardens or, in the worst scenario, bypassing national regulations.

The key is to ensure that the overall costs of complying with ABS rules are lower than the costs resulting from bypassing legal rules. Decision 391 could eventually act as a disincentive to concerned parties, which might also discourage potential investors.

### **The implementation process for Decision 391**

Decision 391 is a fairly new and innovative legal instrument in the region. Analysts have called for caution in implementing it. They agree that owing to evolving technologies; limited North/South inter-institutional arrangements and cooperation; uncertain demand or, more specifically, a poorly understood and assessed market for genetic resources; and under funded and limited scientific and technical capacities in the region, the implementation stages will provide the testing ground for the effectiveness and efficiency of the regime in the regional context.



Information regarding all bioprospecting and related activities in member States is very dispersed and has not been fully compiled yet. There are only a few relatively well-documented cases regarding the implementation of Decision 391.<sup>15</sup>

### ***Some practical cases***

1. The first documented case of bioprospecting (where Decision 391 was applied) involved Andes Pharmaceuticals Inc. from the United States. In early 1997, Andes requested access to genetic resources in Colombia. The Ministry of the Environment (the national authority in Colombia) denied the application (Resolution 1030, Nov. 14, 1997) on the grounds that it *did not* comply with the formal substantive technical, legal and scientific conditions of Decision 391. Official arguments for denying the application differed from those of other parties who analysed the application and from the official response to it by the Ministry. In any case, most agreed on the Government's overall decision to reject the application.
2. The Peruvian International Co-operative Biodiversity Group Project Peru (ICBG), an international bioprospecting effort funded by the National Institute of Health, the National Science Foundation, USAID and the National Cancer Institute, was initially negotiated in December 1993, well before Decision 391 entered into force (although almost at the time the CBD became binding for Contracting Parties in 1996). Parties to the ICBG (Washington University, the National Natural History Museum of Peru, Peruvian University Cayetano Heredia, the National Confederation of Amazonian Nationalities of Peru and Searle & Co.) finally reached an agreement based on the CBD and principles of the draft Decision 391. Two salient features of this case were that (i) even though the United States had not ratified the CBD, its general ABS principles were taken into account as part of the negotiation process; and (ii) Searle & Co. agreed to a "know-how" licence agreement by which indigenous Aguaruna communities of the Alto Marañon in the Peruvian Amazon provided knowledge (whether or not in the public domain) related to medicinal plants in exchange for benefits from and restrictions on the use of this knowledge.<sup>17</sup> This case has strongly influenced the Peruvian draft proposal for the protection of indigenous collective knowledge. It was used as a practical model based on which key issues and problems could be conceptually analysed.
3. Venezuela has chosen to apply Decision 391 directly. In late 1999, the Ministry of the Environment (the national competent authority) concluded an access contract with the Eidgenossische Technische Hochschule of Zurich (Switzerland) for bioprospecting activities to be carried out in the Alto Orinoco, on Yanomani lands. The Yanomanis were not included in the negotiations even though many medicinal plants in the region are well known and had been utilized by them for ages. According to information widely disseminated by the media, the contract establishes very questionable compensation for indigenous communities who participate in the project.<sup>18</sup> Some information suggests that the Yanomanis will receive 30 per cent of the total costs of the contract. It is not clear what this 30 per cent figure actually represents. Although the exclusion of the Yanomanis from the negotiations is certainly unacceptable from a moral, cultural, and even legal point of view, for the purposes of this discussion it is interesting to examine the various and often conflicting interpretations given to the application of Decision 391. While the government considers it has proceeded correctly and legally, many NGOs and experts think otherwise.

It is worth noting that, despite the "cartel" principle, at least in the specific cases of bioprospecting applications in Colombia and Venezuela, no evidence exists to suggest that national authorities took into account regional interests (for benefit-sharing purposes) or even communicated with competent national authorities of other member States.

### ***Regulatory initiatives***

Secondary and complementary legislation is not the only condition or even the most important one for ensuring adequate implementation of the Common Regime.

- Bolivia adopted Decision 391 and, with support from GEF/UNDP, and undertook a national planning process that included a review of Decision 391. Technical assistance was provided by the Royal Botanic Gardens (Kew Gardens) through its Convention and Policy Section, whose staff had participated in developing institutional and national ABS policies and regulations worldwide.
- Ecuador has finalized the review of a draft proposal, while Peru published, in the Official Gazette on October 21, 1999 (Documento de Trabajo 003-1999) as an annex, the Proposal for a Regime for the Protection of Collective Knowledge of Indigenous Peoples. The objective was to invite comments on its own draft regulation for implementing Decision 391.
- Venezuela's Biological Diversity Law (Law 5468) includes a chapter on access to genetic resources. However, its articles (72 to 78) are mainly a repetition of provisions contained in Decision 391. Hence, this law is not truly implementing legislation.

### ***Final thoughts on the implementation process***

At the Fifteenth Global Biodiversity Forum, held in May 2000, in Nairobi, Kenya, Decision 391 was assessed. This effort proved futile, as it had not yet been fully implemented in the Andean region. However, it is important to remember that a critical and fundamental task for analysts is to determine why Decision 391 had not been implemented by then and point out the direct and indirect causes for the delay. Reasons that currently severely limit the possibility of implementation are related to:

- Major policy concerns
- Practical difficulties
- Legal uncertainties
- Differing interpretations
- Institutional limitations
- Data and information gaps
- Lack of flexibility with respect to national needs and the nature and characteristics of specific bioprospecting activities

The rationale of legislators was to establish a system giving countries a very specific and detailed legal framework for ABS so as to limit the ability of member States to develop more flexible approaches that might undermine regional interests.

The exact cooperation mechanisms ensure the sharing of monetary and non-monetary benefits derived from access to and use of genetic resources originating from more than one Member State. Although this cooperation is at the core of the common regime, to date its realization has been virtually non-existent. Most of the documented cases and situations seem to be addressed from a national perspective.

Articles 48 and 49 of Decision 391 call on member States to notify each other when access applications are submitted, contracts are negotiated, authorizations are given, or any bilateral or multilateral negotiations are undertaken with regard to ABS activities. Negotiations are underway to make the common regime operational and not unduly complicated; whether the outcome will be positive or will cause additional burdens remains to be seen.

### **The Access Regime: Inevitable conflict or reconciliation of interests?**

Access to biological and genetic resources is, in many instances, closely related to how indigenous peoples study, use and enhance them and to the application of intellectual property rights (basically patents and PBR) over products and processes derived from these resources. This is unanimously recognised by the participants involved in the process of developing Decision 391. The relationships between ABS, IPR, TK, innovations and practices are complex.

For example, Article 16(5) of the CBD points out that Contracting Parties recognize that “patents and other intellectual property rights may have an influence on the implementation of this Convention”. On the other hand, the concept of “biopiracy” (see Box 2) has been widely used to highlight how, through access to biological and genetic resources and through the IPR system, the knowledge, innovations and practices of indigenous peoples can be unlawfully used and exclusive rights granted to transnational corporations. The new plant varieties and biotechnological products and processes protected by IPR *incorporate* knowledge, innova-

### Box 2 Biopiracy in the region

Biopiracy is a very effective political concept covering instances where biological materials and indigenous peoples' knowledge are used and commercialized (or subjected to some form of IPR) without the consent of national authorities or communities or adequate compensation. From a strictly legal perspective, it needs further analysis in order to become conceptually sound. However, the concept is very useful particularly for highlighting the extremely disadvantaged situation of indigenous communities with regard to the commercial and industrial use of resources found on their land, and which they have conserved, nurtured, further developed and domesticated and studied over long periods of time. It is also useful to stress how the North has come to dominate the South in the “bioresources market” through the use of its biological resources.

#### The Quinoa Patent

In April 1994, a patent was awarded in the United States (Patent No. 5304718) for *Cytoplasmic Male Sterile Quinoa*. According to the patent document, “the cytoplasm conferring the property of male sterility is derived from the *Apelawa* variety of quinoa”, a variety long used by Andean farmers. Indeed, at first glance it seems ludicrous that researchers could obtain rights over certain characteristics of an *Apelawa* variety used for centuries by Andean farmers, especially when literature was available at the time regarding reported sterile male quinoa lines. Certainly this is a case where the biopiracy concept applies. However, further examination (the case made headlines throughout the world) showed that the sterility was found in *Apelawa* varieties growing in the United States and not in Andean varieties. In this particular case, it had been transferred from weed species growing in nearby areas. However, owing to concerns by exporters in Bolivia regarding the potential impact of the patent for their future production and exports to the United States, a campaign was initiated, to be ended only in 1998, when Colorado State University dropped the patent.

#### The Ayahuasca Patent

More controversial was US Patent No. 5751, awarded to Loren Miller of the United States in 1986 for a claimed new and novel variety of *Banisteriopsis caapi* (cv), ‘Da Vine’ or Ayahuasca, in indigenous cultures of the Amazon. This plant is cultivated and used by indigenous communities for religious and medicinal ceremonies throughout the Amazon. Based on the argument of prior art, a request for re-examination was filed with the US Trademark and Patent Office, by COICA and the Centre for International Environmental Law in March 1999. The request also challenged the variety’s novelty, arguing that its variations were widely known in scientific literature. The request also said that the patent ran contrary to the public policy and morality claims of the Patent Act, owing to the sacred nature of ‘Da Vine’. The patent was annulled shortly thereafter.

tions and practices of indigenous peoples without their consent. These IPR do not give due compensation to these people, and in general have little consideration for their interests.

Although in some cases it is hard to ascertain the quantitative and qualitative extent to which indigenous knowledge, innovation, and practices are used or have been incorporated into IPR-protected inventions, it seems clear that there is a use of TK at some point during the research and development process in many of these protected inventions. Going back in history, the uses of quinine, curare, Pau d’Arco, Sangre de Grado, ginseng, and many other medicinal plants for instance, were first identified because they were part of indigenous peo-

ples' cultures in different parts of the world. Nowadays, the wide availability of ethnobotanical information in books and databases throughout the world is certainly a means by which previously "unknown" uses and properties of medicinal plants can be used in modern societies for the development of new drugs.

Article 8(j) of the CBD offers an initial legal basis for developing mechanisms to protect indigenous peoples' interests. Even if it may be extreme to argue that in *all* cases IPR systems are unsuitable for protecting *all* indigenous peoples' interests, it is clear that patents and PBR in particular are not the ideal instruments through which indigenous peoples might protect their knowledge, innovations and practices.<sup>19</sup> Reasons vary, and include the level of novelty required to protect an invention, the way in which innovation is generated by indigenous peoples (collectively, but also individually), the complexity of administrative procedures to achieve patent or PBR protection, and the costs of requesting and enforcing patent or PBR protection, to name a few.

Under Article 7 of Decision 391, Member States "recognise and value the rights and decision making powers of indigenous, Afro-American and local communities over their traditional knowledge, innovations and practices associated to genetic resources and derived products". The decision-making power is really a formal and explicit recognition by the state of rights that the indigenous peoples and communities have always had, but that, for a number of reasons, have hardly ever been exercised. Its explicit recognition is very important from a policy perspective. More interestingly, although subject to the national legislation qualifier and to the need for further specific content development, it recognizes indigenous peoples' rights over knowledge, innovations and practices.

Decision 391, through Article 35, provides the necessary legal instruments for indigenous peoples to ensure that their knowledge, innovations and practices are used subject to their consent and to agreement on benefit-sharing arrangements.<sup>20</sup> It also recognizes the critical importance of the IPR and indigenous TK issue. In response to Member States' concerns, the Eighth Transitory Disposition determines that, upon the submission by Andean countries of national reports, the Secretariat of the Andean Community will prepare a proposal for the "establishment of a special regime or harmonisation regulation oriented to strengthen the protection of indigenous, Afro-American and local communities traditional knowledge, innovations and practices in accordance with Article 7 of this Decision, ILO Convention 169, and the CBD". This commitment has been pending since 1996.

All Member States have initiated and continue to develop (with varying degrees of progress) national processes for assessment and for eventually creating special legal mechanisms to protect indigenous peoples' knowledge. This is to balance a situation where certain types of intellectual innovations are protected through IPR while other equally valuable and important innovations remain unprotected and consequently there is no equitable compensation for their use. Peru and Venezuela have taken major steps to address this problem.

### **The link between access and the IPR regime**

Decision 391 is the first binding regulation<sup>21</sup> in the world (other than general references in the CBD to the relationship between biodiversity and IPR and some Food and Agriculture Organization resolutions) to establish a clear and unmistakable link between access to genetic resources and the IPR system.

Based on Article 16(5) of the CBD, Decision 391 included two provisions that are extremely important for Member States. These have been integrated by Bolivia, Colombia, Ecuador, Peru and Venezuela and adopted as (the new Andean Community Common Regime on Industrial Property) in Decision 486 in September 2000.<sup>22</sup>

The Second Complementary Disposition of Decision 391 establishes that "Member States will not recognise rights, including IPRs, over genetic resources, derived or synthesised products and intangible associated components, obtained or developed based on access activities which do not comply with this Decision". Additionally, "Member States are entitled to request the annulment of the corresponding actions in countries which might have conferred rights or protection titles". In principle, this provision seeks to ensure the interests of Member States as



countries of origin. It is worth noting the reference to “synthesised products”, which are essentially new technologies and over which Decision 391 seeks to extend its scope.

The Third Complementary Disposition establishes that “National intellectual property offices shall, in cases where they have reasonable or concrete evidence that the product or processes for which protection is being requested have been obtained or developed from genetic resources or their derived products for which any of the Member States is a country of origin, require the applicants to submit the registration number of the access contract and a copy of it, as a pre-requisite for the granting of the corresponding right”. This provision continues by stipulating that IPR offices and access authorities will develop mechanisms to exchange information regarding access contracts and IPR applications.

In accordance with these Dispositions and further specifying their scope, Article 26(h) of Decision 486 requires patent applications to include, if relevant, “a copy of the access contract, when products or procedure whose protection is requested have been obtained or developed based on genetic resources or the derived product of which any of the Member States is a country of origin”. Paragraph (i) goes on to establish that, if necessary, a copy of the licence or authorization for the use of indigenous knowledge will also be requested. Critical here is the “if it be the case” qualifier. National authorities will have to determine under what circumstances and regarding which inventions they will request these documents. Certainly this could be the case if they have evidence that a biotechnological invention is based on genetic resources of which member States are the countries of origin.

This approach provides an innovative mechanism to ensure that, when using genetic resources (or TK) in an invention for which IPR is requested, applicants satisfy all requirements related to ABS and IK protection before the rights are granted. There are some constraints, though, including jurisdictional limitations. (This mechanism can be applied only in Member States.) There could also be practical problems – for example, in identifying the exact geographical and legal origin of genetic resources contained in a biotechnological invention for which IPR is requested.

These problems should, however, certainly not be regarded as insurmountable. This mechanism, if adequately implemented, not only in Member States but also throughout the world, could:

- Provide a means for *all* parties to the CBD (providers and users of genetic resources alike) to promote compliance with its general ABS, technology transfer, and IPR provisions:
- Provide a mechanism for safeguarding the interests of countries with mega-biodiversity that provide biotechnological sectors (in the North) with genetic resources; and, most importantly,
- Create a system that acts as an incentive for countries with mega-biodiversity to make their ABS regimes more flexible. If industrialized nations adopt these measures and include them in their own IPR regimes, this could pave the way for a process of mutual confidence building among those traditionally supplying resources and those using them. It would positively influence international negotiations as well as research and development initiatives, and it would facilitate and encourage bio-prospecting endeavours in general.

The Andean region is again the source of a unique and ground-breaking industrial property regulation (Decision 486), which specifies that, while the patenting mechanism is available, in the interest of justice and fairness applicants must make sure they also comply with ABS provisions and regulations protecting indigenous peoples' knowledge that could be in force, and that are intrinsically related to certain types of innovation, particularly to biotechnological products and processes.

There are experts who already, and validly, question Decision 486 as a whole. Indeed, their argument focuses on the overall IPR system and the TRIPS Agreement as mechanisms that have been imposed (fundamentally by the United States) on developing countries and ultimately only favour industrialized nations. Furthermore, the important but often sidelined moral and ethical argument against patenting of life forms is another important dimension along which discussions could be held. Decision 486 falls within the scope of these arguments. But

the Andean IPR Decision is paradoxical in that it contains so many explicit groundbreaking provisions such as Articles 3, 26 and 29, which refer to the protection of Member States' interests in genetic resources and biologically derived materials, as well as to the interests of indigenous peoples.

Only a few years ago, a regional IPR regulation containing a single reference to ABS or indigenous peoples would have been unheard of anywhere in the world. An important step has now been taken toward finding ways in which IPR systems and ABS provisions, and ultimately the CBD principles, can establish the necessary synergies for ensuring that biodiversity components are used sustainably and the benefits derived from them are shared equitably.

### **Perspectives for research and development and the deterrent effect of Decision 391 in the region**

The institutional and corporate views of private biotechnology companies, pharmaceutical companies, *ex situ* conservation centres, and research institutions regarding the effects of the ABS principles of the CBD and specific ABS legislation on research and development processes vary considerably. If the policies and regulations are complex, they discourage the establishment of bioprospecting alliances with national institutions. As a result, alternative options usually imply targeting other countries (where no or lesser restrictions are in place) or seeking other sources of biological and genetic materials (e.g. from *ex situ* conservation centres).<sup>24</sup>

Many of these institutions and even companies readily acknowledge that, in a context where national and regional policies and rules for accessing biological and genetic resources are changing dramatically, they need to adapt to this emerging scenario.<sup>25</sup> However, they also point out that stringent regulations will not promote the cooperation that is necessary for all bioprospecting efforts. Strict and burdensome regulations imply heavy transaction costs, which in general will inhibit national and international bioprospecting initiatives and research activities in the region.<sup>26</sup>

In its present form, Decision 391 does not necessarily *promote* bioprospecting,<sup>27</sup> even though its objectives refer to "promotion" as a key feature of the regime. The policy goal of negotiators and drafters involved in the development of Decision 391 was to establish a system to strictly control access to and use of genetic resources and ensure state participation in benefits derived from these resources. The balance between regulating access and facilitating it (as provided by Article 15(2) of the CBD) still needs to be met, either through continued evolution of practice during future implementation of Decision 391 or through formal legal review of it.

The provisions do not show that the state (represented by the national authority) actually needs to act as a *promoter* of inter-institutional collaboration. Incentives for this are lacking, even though there are references to promotion of cooperation in various provisions.

Currently there is evidence that while a series of bioprospecting initiatives are on hold, in some cases, others could be under way *de facto*, with Decision 391 being sidelined. As was already mentioned, the limited availability of systematic information about ongoing projects and geographical features of the Andean and Amazonian region makes it extremely difficult to assess the general situation in the field and to establish control mechanisms.

Last but not least, from a commercial viewpoint, the importance of confidentiality regarding certain aspects of bioprospecting agreements is understandable, but the secrecy and non-transparency that surround many of these agreements (and the limited access provided to these agreements) naturally tend to fuel suspicion and negative reactions. Applications for, and sometimes even the granting of, very questionable patents (e.g. for Ayahuasca, genetically modified cotton and soya, quinoa) do not contribute to reducing tensions or fostering an environment of trust. Bioprospecting activities can be enhanced by making information available on proposed projects, and by sharing information regarding the general structure of the project and the involved partners.



### Box 3. Towards a more flexible legal framework on ABS

Following is a proposed basic and general framework with elements that could be considered when defining a legal ABS regime, whether at the national or regional level. Before defining a system, countries should assess and take into account legal and practical considerations arising from integrating existing systems for accessing biological material and samples (including scientific collecting permits, CITES procedures and the like) or establishing the necessary linkages between them. Whether the national authority for all procedures that imply accessing biological material or genetic resources or their derivatives is a single entity, or different procedures are developed for different types of access, its competence and jurisdiction should be clearly identified.

Before the legal structure of a norm can be defined, it is also critically important to have a very clear idea of the objective and ultimate purpose of bioprospecting laws in the context of national (or regional) research and development targets.

**Step 1.** Submission of an access application to a national authority.

**Step 2.** Submission of the access project (all agreements, covenants, letters of intent, etc. signed by participating institutions). Parties are free to negotiate, although they will need to take into account general conditions established by the national authority (e.g. necessary participation of a national research institution in field and lab work; the need for part of the research and development process to be carried out in the country if facilities and capacities are available; the need for a percentage of monetary benefits arising from the commercialization of a product to be directed to a national research and development fund; the need to seek the consent of indigenous peoples if fieldwork is carried out on their lands; the need to submit copies of all reports to the national authority; and so on).

Notes:

- The complexity of the access project will depend on the type of bioprospecting activity. The national authority will require certain discretion when assessing applications and projects. Training and capacity building at the national level and for national authority officials are crucial for ensuring the technical soundness of decisions and the overall transparency of procedures.
- Special procedures apply for *ex situ* conservation and research institutions. Fieldwork should not be unduly restricted. Restrictions could apply at the stage where deposited materials are transferred to third parties. *Standard material transfer agreements* could be a suitable instrument for this purpose.

**Step 3.** The national authority approves the overall project after verifying that general conditions are met.

For a system like this to be operational (basically in Latin American countries), one must assume that parties (individuals, institutions, the state, indigenous peoples) who have rights over biological resources are entitled to negotiate with regard to the genetic resources and information contained therein. This does not imply that they necessarily have property rights over these resources, but that they are legally entitled to negotiate concerning them. Conditions of access would then ensure that state or national interests are taken into account and respected. The range of possible benefits for the country could include strengthening of national (private or public) research capacities; promotion of bioprospecting efforts throughout the country; strengthening of indigenous communities' negotiation capacities, inasmuch as they are free to (a) decide if they want to negotiate, and (b) decide on the terms of the negotiation process (support by specialized institutions will probably be required); promotion of cooperative projects; continued exchange of scientific information; training of national scientists; and enhancement of national research and development capacities.

### **International research centres**

In access-related activities, *ex situ* conservation and research centres (botanical gardens, aquariums, nurseries, etc.) are very important parties, since they collect genetic resources and carry out taxonomy and other research. They may develop commercial products, maintain materials and, in many cases, transfer this material to third parties. All *ex situ* centres in the region have relevance with respect to Decision 391, but this discussion focuses on two international agricultural research Centres, the International Centre for Tropical Agriculture (CIAT) in Colombia and the International Potato Centre (CIP) in Peru.<sup>28</sup>

During negotiations regarding the common regime, *ex situ* centres, particularly CIAT and CIP, were perceived as unregulated filters through which genetic resources were continuously exported to industrial nations. The general feeling among negotiators, based on historical patterns of genetic resource flows, was that this flow of resources from *ex situ* centres should be further regulated and controlled (though no hard data regarding the transfer of materials – e.g. their origin, destination, the purpose of the transfer, etc. – were available or rigorously assessed). Interestingly, during the negotiations on Decision 391, limited if any contact was made with CIAT and CIP representatives to obtain their input regarding the proposed regime.

Articles 36 and 37 of Decision 391 specifically address the situation of *ex situ* centres, and some other articles complement these provisions. These obviously apply to CIAT and CIP. Article 36 establishes that “the National Competent Authority can conclude framework access agreements with universities, research centres or recognised researchers which allow for the execution of various projects, in accordance with Decision 391 and the national legislation of each Member State”. Article 36 seems to suggest a more flexible regime for research centres that continuously access biological resources and carry out fieldwork and sample collection. Article 37 establishes that *ex situ* centres will have to agree to access contracts under all circumstances in which they access genetic resources. Article 37 further stipulates that the national authority “may conclude with third parties, access contracts of which Member States are countries of origin which are deposited in these centres”. Although the qualifier “may” is used, the phrase is interesting in that it reflects, once again, a general orientation of the common regime where *all* possible situations involving *ex situ* centres, including transfer of materials to third parties, require state intervention.

Article 36 of Decision 391 establishes that “the National Competent Authority can conclude framework access agreements with universities, research centres or recognised researchers which allow for the execution of various projects, in accordance with Decision 391 and the national legislation of each Member State”. Under this provision, CIAT and CIP, which certainly *are* recognized research centres, could decide to negotiate a framework access agreement with the national authority, although the actual terms and scope of this particular type of agreement are not defined by Decision 391.

Two initial questions need to be addressed. (1) Which one of these articles applies to CIAT and CIP, given that they are both research centres *and ex situ* centres? (2) In the case of Article 37, it would seem that the need for participation, intervention and control by the state arises at two different points: (a) during fieldwork for which access contracts are needed, and (b) when samples are transferred to third parties. Why is intervention needed both when collecting and when transferring materials? Rather, why not develop a system in which ABS measures cover all situations and complement institutionally regulated transfer activities?

CIAT and CIP are developing their own institutional policies with regard to ABS; therefore, the answers to the above two questions are complicated. Though not necessarily comprehensive in their approach, they do reflect the concern of two very special types<sup>29</sup> of institutions and their initial steps to adapt to an evolving international ABS regime,<sup>30</sup> which includes a review of the International Undertaking on Plant Genetic Resources and its eventual alignment with the ABS principles of the CBD.

The first transitory disposition of Decision 391 calls on entities that hold genetic resources (i.e. *ex situ* centres) of which Member States are countries of origin to regularize their situation with the National Competent Authority. It does not specify whether this requires the conclusion

of an access agreement for each and every sample held, or whether it requires a framework access agreement if Article 36 is to be invoked.

### **The problem of parallel processes: CITES permits and scientific collection permits**

In parallel to Decision 391, Member States have long-standing legal instruments that regulate access to biological material and flora and fauna samples. From a strict interpretation of Decision 391 (and its definition of “access” and scope), it would seem that the common regime either supersedes any other system for collecting biologically derived materials or is yet an *additional* legal requirement to those imposed by these traditional scientific or commercial collecting systems. Peru has clarified this situation and is allowing activities for the collection of biological materials (e.g. Sangre de Grado or *Croton lecheri*, Pijuayo or *Bactris gasipaes Kunth*, Uña de Gato or *Uncaria tormentosa*) for commercial purposes for the development of new products. However, the key question is whether the companies could access biological resources for their general properties as such, or indirectly for properties derived from their genetic make-up.

Some countries, such as Ecuador, have interpreted Decision 391 and its definition of “derived products” as including these types of activities within its scope and therefore including the need to apply ABS rules of the Common Regime. Peru, on the other hand, is not applying these rules to these activities but is instead applying the commercial collecting permit system.<sup>32</sup>

In early 2000, the Fundación Amigos para la Naturaleza (FAN) of Bolivia and the United States Department for Agriculture (USDA) presented an access application to the Bolivian Directorate General for Biodiversity (DGB) of the Ministry of Sustainable Development and Planning in order to collect wild peanut specimens, compile inventories, prepare a distribution atlas and provide specimens for national and foreign *ex situ* facilities. This appears to be a typical conservation project for an agricultural (industrial) crop where access to genetic resources *per se* is not necessarily the main objective of the overall project, although it could be argued that peanuts are biological and genetic resources at the same time. In any case, FAN has strongly argued that all formal requirements have been fulfilled (including strict compliance with the national Regulation and Decision 391). However, the Bolivian Forum of Environment and Development and indigenous representatives have denounced this project as a form of biopiracy. This again illustrates conflicts within countries regarding exact interpretation of access rules.<sup>33</sup> FAN argues that the national authority’s (DGB’s) delay in responding shows that there is no incentive for those who seek to undergo and comply with formal legal procedures.

These concerns would also apply to CITES permits and to whether Decision 391 can also be invoked for this specific kind of collection and export of biologically derived materials.

For these cases, it would be important to specify the relations between the different legal systems in force and their application to activities implying access to and use of biological and genetic resources. This would certainly contribute towards legal certainty.<sup>34</sup> During the First International Congress 2000 and the First Peruvian Congress on Medicinal Plants held in September 2000 in Lima, Peru, the lack of reference to or even acknowledgement of Decision 391 when legal and institutional aspects were discussed demonstrated not only limited awareness of the Decision but also perhaps a tacit declaration of position with respect to this regime by all participants (public officials, companies, scientists and representatives of indigenous communities).

### **Decision 391 in the wider international policy context: its impacts and possible future directions**

Decision 391 and Philippines Executive Order 247 served as catalysts for ABS policy and regulatory processes worldwide<sup>35</sup> and as a source of legal elements and comparative regulations for these processes.

The Andean region countries have started seriously addressing critically important issues such as IPR and biodiversity; indigenous peoples' participation and IPR; PIC and mutually agreed terms; operational and practical significance and biosafety because of Decision 391. For most of these issues, Member States have initiated policy and regulatory processes and, indeed, in some cases, have enacted legislation, developed well-advanced drafts, or incorporated these issues into broader regional policy discussions.<sup>36</sup> Decision 391 at the time of writing was the only *regional* approach to ABS and therefore, even if not fully implemented, offers a unique opportunity for other mega-diverse regions to compare the advantages and disadvantages of adopting this option. Based on this approach, the Organisation of African Unity, for example, has developed Draft Legislation on Community Rights and Access to Biological Resources.

The common regime serves as a case study based on which the issues it addresses can be further explored, assessed and developed. It has certainly raised the profile of these issues in the region and elsewhere and has raised the awareness of public officials and civil society in general.

Although it is hard to evaluate the exact role and influence Decision 391 has had in international forums for addressing ABS, such as the CBD, FAO, WTO and WIPO meetings, a review of the actual discussions and the policy, technical and information papers prepared and distributed at the forum, almost always contain explicit references to Decision 391. Arguably, discussions referring to transaction costs of ABS regimes, on how to address problems with PIC when indigenous communities are involved and on how to relate ABS systems to IPR, have relied to a significant extent on the experience of developing and implementing Decision 391.

Many years after its adoption and in the light of ongoing policy and regulatory processes worldwide, most of which incorporate common approaches to the ABS, it remains to be seen whether these efforts have undergone the necessary, comprehensive and rigorous planning processes required to achieve effectiveness and efficiency in ABS regulations as envisaged in Decision 391. In making this assessment the following points need to be borne in mind:

- General enthusiasm regarding regulatory approaches could result in overlooking key elements and practical considerations that, in the long term, might in fact undermine ABS laws.
- Understanding and rigorously assessing (with verifiable data) the markets for genetic resources and their derivatives is critically important.
- How research and development efforts actually work and the demands of different sectors of industry are critical when designing laws and rules that will have a direct impact on these and related activities.
- Assessing national interests in terms of technology needs, training of scientists and, in general, participation in collaborative research and development processes is another factor requiring *ex ante* rather than *ex post* analysis.

ABS regulations based on careful and participatory planning, which takes into account some of these points and undertakes this comprehensive multi-disciplinary analysis, will probably result in more effective laws that in turn will almost certainly improve the possibility of attracting investment in bioprospecting and reliable partners. In all cases, the national interest should be assessed in the light of practical considerations.

## Conclusions

Incentives, whether through a regional legal regime or through national regulations, are key for inducing national and foreign institutions to engage in cooperative research and development processes. A review of Decision 391 (and national secondary implementing legislation in Bolivia and legislature drafts in Peru and Ecuador) does not reveal incentive mechanisms (i.e. tax exemptions for national institutions that require equipment for research purposes and differentiated procedures for taxonomy purposes) but rather a strong tendency by the state to intervene in, regulate and control ABS-related activities.

For the common regime to be effective, a critical question is: *What is the cost of implementing the system in relation to the benefits it generates?* Included would be the costs of (a)



establishing a national authority, (b) training its personnel and administering the system, (c) monitoring activities, (d) negotiating contracts, and (e) evaluating all costs to ensure economic efficiency. This efficiency would need to include identifying the best mechanisms for ensuring that indigenous people are adequately advised and informed.

Equitable bioprospecting depends on effective regulations but also to a considerable extent on the capacity of national scientists and institutions to engage with national authorities in developing medium- and long-term strategies for bioprospecting, and for undertaking research and development in general. Proactive approaches and a clear objective are essential to ensure that research and development objectives are achieved. If a legal framework can reflect this, it will be much better.

Direct participation by national authorities in negotiating bioprospecting agreements for every bioprospecting project is not necessary. National institutions such as universities and research centres (the national support institutions referred to in Decision 391) could represent the interest of the state in these negotiations. These national institutions have impeccable reputations, are directly involved in bioprospecting efforts, know the parties concerned, understand the "business", and could fairly easily ensure that the minimum conditions stipulated by the state in order to secure the national interest are met. It is important to ask what specifically is the national interest in the context of bioprospecting activities. And how, and by whom, can it best be served – for instance, through the training in molecular biology of a public or private university scientist who will then teach new techniques to colleagues and students? National interests should be seen in a wider context and not exclusively from the perspective of the state.

Finally, in its current form, Decision 391 offers limited possibilities for partnerships and cooperative efforts. The problem is not so much that a regional access framework exists, but how this regime is structured and designed. If bioprospecting is seen as a potential tool for developing national scientific knowledge, ensuring a wide range of benefits and promoting strategic alliances among institutions, then being practical and flexible is not incompatible with protecting national interests.

## Recommendations

- a) The Andean Committee on Genetic Resources should undertake a comprehensive policy, economic and legal review of Decision 391 in light of the new information on the market for genetic resources and international policy developments. If bioprospecting is to be promoted as an activity with potentially benefits for the region, through a common policy and legal framework, then this review should consider aspects such as flexibility, overall transaction costs and impact on effective implementation.
- b) Access procedures should be simplified and, most importantly, viewed in the context of differentiated activities and the different stakeholders concerned. These procedures should be very clear and transparent. Flexible alternatives and a degree of discretion by national authorities could help streamline access-related activities.
- c) Most countries have procedures for collecting biological material for research purposes (such as the Peruvian scientific collecting permits or even CITES permits). An access regime should be assessed in the light of existing regulations in order to avoid parallel or overlapping procedures, which would lead to legal uncertainty for all (national and international) interested parties.
- d) National authorities should be clearly identified and their specific roles determined. They should focus on (1) promoting partnerships; (2) creating incentives for these partnerships; (3) providing indigenous communities with legal and technical advice and training on ABS issues or orienting them towards institutions that can fulfil this role; (4) maintaining updated information and databases with regard to all bio-prospecting activities being undertaken in the country (and sharing this information with other competent authorities); (5) overseeing and monitoring bioprospecting activities; and (6) supporting, without unnecessarily intervening in, private and even personal research initiatives and efforts.<sup>38</sup>
- e) It is often hard to determine the overall benefits derived from access to and use of genetic resources. Monetary benefits are usually the focus, particularly for the state, while intangible benefits are usually harder to identify. For example, training and enhancing the ca-

capacities of national scientists, development of databases, taxonomic work, biological assessment of biodiversity-rich areas, preparation and publication of scientific papers and reports, participation by national scientists in work undertaken in foreign laboratories, and development of strong institutional partnerships are all external valuable benefits that accrue, directly or indirectly, in the medium or long term, to the country as a whole. States should develop measures to ensure that these benefits are continuously generated through different modalities, as direct participation by the national authority is not the best means of ensuring this.

- f) When negotiating or establishing benefit-sharing conditions, Andean countries and national institutions should seek to ensure that at least part of the research and development process, training opportunities and financial resources are targeted at fighting national and regional endemic diseases such as yellow fever, malaria, cholera and other tropical illnesses.
- g) The process of developing new rules and provisions for the common regime or national regulatory frameworks should take into account areas such as the following: evaluation of international policies and instruments; specific ABS policies of institutions seeking access; possible alternative instruments to ensure sharing of benefits derived from access; and measures that “user countries” could implement in order to ensure that the interests of the country of origin are protected.
- h) Aggressive awareness-raising processes need to be initiated by Member States of the Andean Community to explain the significance of Decision 391 and the scope of its provisions. The Andean Committee on Genetic Resources could develop a publication aimed at potential national and international bioprospectors that covers common approaches and addresses potential questions and misconceptions.

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## Notes

- <sup>1</sup> Binding legislation does not require Congress approval (unless stated otherwise) and is mainly passed through Decisions approved by the executive branches of governments. Common Regimes establish minimum legal standards that must be met and implemented by Member States.
- <sup>2</sup> To a considerable extent, Decision 391 is based on legal elements suggested in a technical report (*Towards a Legal Framework to Regulate Access to Genetic Resources in the Andean Pact: Possible Elements for an Andean Pact Decision on Access to Genetic Resources*) prepared for the Andean Community by the Environmental Law Centre of the World Conservation Union (ELC-IUCN) and the Peruvian Society for Environmental Law (SPDA) in late 1994. From a review of ABS legislation in Brazil, Costa Rica and the Philippines and draft proposals from the Organisation of African Unity and Nicaragua, among others, numerous elements and issues raised in the report and subsequently addressed by Decision 391 are also part of these regulatory instruments and proposals. The notion of a *regional* approach to ABS has also influenced Decision 391.

- <sup>3</sup> Although literature on policy and legal aspects of ABS can be traced back to the late 1970s and particularly 1980s with the influential work of people like Pat Mooney (1983) and Jack Kloppenburg (1998), papers produced by the United Nations Food and Agriculture Organization (FAO) and soft law instruments produced thereafter (FAO Undertaking, Codes of Conduct), specific legal doctrines and contemporary law on the subject were still sparse during the early 1990s.
- <sup>4</sup> Decision 345 on a Common Regime on Plant Breeders' Rights, enacted on October 21, 1993.
- <sup>5</sup> Decision 344 of the Andean Pact on a Common Regime on Industrial Property was adopted during a meeting of the Commission of the Cartagena Accord in Bogotá, Colombia, on October 21, 1993.
- <sup>6</sup> The National Biodiversity Strategy (NBS) of Colombia, which had been publicly discussing many of these issues in Colombia, and SPDA, which had been participating in Decision 345 negotiations, formally expressed many of these concerns to the Andean Pact Board. The NBS of Colombia and SPDA presented the Andean Pact with comments and proposals regarding the need to link the plant breeders' rights system with regulations on access to genetic resources, thus, trying to ensure that access to genetic resources from Member States for breeding purposes was subject to CBD principles (including prior informed consent and mutually agreed terms).
- <sup>7</sup> For further analysis of the cartel notion see: Vogel (1997).
- <sup>8</sup> Possibilities for an effective cartel-like approach were limited by the fact that Amazonian countries like Brazil, Guyana and Suriname were not members of the Andean Community. In Brazil, the federal government (through an Inter-Ministerial Group on Access to Genetic Resources) was taking a more cautious approach to regulating access to genetic resources and assessing its potential impacts on scientific and technological developments in the country. Brazil's Congress was also developing a homegrown ABS proposal very much in line with Decision 391 provisions (personal conversation with Marcio Miranda of Empresa Brasileira do Pesquisa Agropecuaria, 1996). On June 29, 2000, the Government of Brazil enacted Media Provisoria No. 2052 to regulate access to genetic resources. This regulation, which is in practice a law, established the legal framework for ABS in Brazil.
- Although the Amazon Co-operation Treaty (TCA) includes all Amazonian countries, its regulatory powers are very limited, and, therefore, no binding legislation (such as Decision 391) can be enacted. It remains to be determined whether in fact a more general, non-binding framework for ABS under the TCA could be designed to serve a more effective role in the region, and whether cooperation mechanisms between the TCA and the Andean Community could also help to serve this purpose.
- <sup>9</sup> Starting in early 1994, the ELC-IUCN and SPDA organized a regional process that, in general terms, consisted of an initial meeting of experts in Lima to discuss a first draft (May 1994); distribution of a consolidated text among leading experts; a regional workshop in Villa de Leyva, Colombia (August 1994) to fine-tune the text; and the final submission of a technical report to the Andean Pact (October 1994). This would be part of a non-governmental discussion phase, which would provide a political and governmental stage with inputs for the development of what later would become Decision 391. The governmental discussions consisted of six expert meetings and adoption of a final text in July 1996. For further details of this process, see Caillaux et al. (1999).
- <sup>10</sup> Peru and Ecuador began national processes to develop implementing legislation as early as 1997. In October 1999, the Government of Peru published in the *Official Gazette* the first draft access proposal to implement Decision 391. Bolivia on the other hand, presents a *sui generis* situation: although it adopted Supreme Decree 24676 to regulate Decision 391 on June 21, 1997, this regulation has not been fully implemented by the national authority.
- <sup>11</sup> Through Resolution 414 of July 22, 1996, the Andean Pact adopted a referential model/standard application for access to genetic resources.
- <sup>12</sup> For more on these issues see Rosell (1997).
- <sup>13</sup> For a comparative analysis of these different regimes see Bass and Ruiz Muller (2000).
- <sup>14</sup> Genetic information (reflected in biotechnological products or processes) can currently be protected basically through patents. Even if existing in nature and "simply" isolated through a novel procedure, or contained in a product, genes and their sequences can be subject to patents in many countries. Arguably, there is a level of human intervention that enables this isolation and presentation of the genetic information in a new format or context (a new product). It is through human activity that genes are characterized and genetic information deciphered, even if only partially.
- <sup>15</sup> The Regional Office for South America of IUCN conducted a project to determine the number and main features of all bioprospecting projects in South America (not only within Andean Community countries).
- <sup>17</sup> For more on this project see Tobin (1997).
- <sup>18</sup> See, for example, "El Ministerio del Ambiente Autorizó a Universidad de Suiza a Usar Recursos Genéticos de las Tierras Yanomani", *El Nacional*, January 26, 1999..
- <sup>19</sup> The concepts of "knowledge", "innovations" and "practices", although used very loosely to refer to indigenous peoples' intellectual effort and output, imply different aspects of this effort and probably

have different implications, particularly from a legal point of view and, more so, when undertaking regulatory efforts. This is furthermore relevant as legal frameworks need to be very clear regarding the object they seek to regulate and protect. Knowledge clearly seems to be an intangible element, and this fact can be reflected in innovations (if these are limited to tangible products such as traditional medicines) and practices (if these are also limited to tangible processes or procedures such as how to prepare a traditional potion). Others strongly suggest that knowledge, innovations and practices, and resources on which they are based, become a single entity that has to be protected as a whole. In any case, experts and policy makers will need to reflect on how these concepts are defined in a specific protection regime, whether at the national or international level. See Ruiz (1999).

- <sup>20</sup> Article 35 specifically refers to the case where access is sought for resources with which an *intangible component* is associated. In this situation an annex (the agreement, contract, etc.) will be integrated into the access contract. This annex will be signed by the applicant and provider of the intangible component. In certain cases (subject to national legislation), the annex could be also signed by the national authority. The *intangible component* refers to *any* knowledge, innovation and practices, not necessarily or exclusively those of indigenous peoples.
- <sup>21</sup> Although this is true in a regional and international context, strictly speaking, the first legal instrument to establish a link between access and IPR was Colombia's Decree 533 of Colombia (1994), which regulated the plant breeders regime. Article 10(f) regarding the application to obtain a breeder's certificate establishes that the application should disclose the genetic origin of the material, and paragraph (h) refers to the need to disclose the geographical origin of the material used for the new variety.
- <sup>22</sup> This replaced Decision 344 as of December 2000.
- <sup>24</sup> For a comprehensive overview of the different positions of companies and industry in general and research institutions regarding ABS regulations, see Ten Kate and Laird (1999).
- <sup>25</sup> Some of these organizations have developed their own institutional policies to orient and guide their bioprospecting and research practices. Examples include the Botanic Garden Policy on Access and Benefit Sharing, which includes gardens in Australia, Brazil, China, Colombia, Germany, Ghana, Malaysia, Mexico, the Russian Federation, South Africa, the United States and the United Kingdom in an effort to develop a common approach to ABS from the perspective of botanical gardens acting as users and providers of biological and genetic material. The Royal Botanic Gardens Kew Policy on Access to Genetic Resources and Benefit Sharing (January 1998) is another example. Some International Agricultural Research Centres of the CGIAR, such as the International Potato Centre in Peru, currently have in force Material Transfer Agreements (MTAs) as mechanisms to regulate the use of their collections. They also have institutional policies on IPR and for general use of deposited materials. The MOSAICC project (Micro-organisms Sustainable Use and Access Regulations - International Code of Conduct) is also developing guidelines and norms to ensure that microbial collections conform to CBD principles. The Strathclyde Institute for Drug Research in the United Kingdom has standard agreements regulating how the institute will access resources and the benefits it will share. The US National Cancer Institute also has an institutional policy with respect to ABS. Indeed, many institutions and companies are addressing the issue, and there seems to be a clear tendency towards incorporating ABS considerations into corporate routine practices, whether through policies, non-binding regulations, MTAs or other instruments. How these policies link to national and regional ABS policies and regulations is key for ensuring comprehensive, coherent and mutually supportive ABS systems.
- <sup>26</sup> During the XVI International Botanical Congress held in St. Louis (United States) in August 1999, a specific session on ABS clearly reflected the views of botanists and scientists in general: although most agreed that in the context of international policy and the CBD in particular, ABS rules were now an integral and unavoidable part of the research process, they highlighted the potential risks of over-regulating, restricting and probably unintentionally affecting research. Scientists from developing countries would be significantly affected by declining cooperation and possibilities for institutional partnerships. Furthermore, they stressed the importance of not imposing restrictions on taxonomic research as the building block for any biodiversity conservation or sustainable use strategy (whether regional or national).
- <sup>27</sup> During personal conversations since 1996 with national and international researchers (from universities, botanical gardens and CIP) and representatives of the private sector (national and international companies), all agreed that, despite the interest in continuing bioprospecting and research activities in the Andean region, Decision 391 in its present form does not promote cooperation or collaboration or provide incentives for undertaking these activities. The recent study by Ten Kate and Laird (1999) highlights some private-sector reactions to ABS policies and regulations in general.
- <sup>28</sup> For a detailed analysis of Decision 391 and its relation with CIAT and CIP see Ruiz (1999).

- <sup>29</sup> CIAT and CIP are special in that they hold agricultural accessions from numerous countries. Not all indicate the origin of the material. Most importantly, these resources are basically used for agricultural research purposes. Considerable amounts of material (from the region and abroad) are used directly in Colombian and Peruvian national agricultural research systems and benefit national and local populations in general.
- <sup>30</sup> For a complete review of CIP policies on ABS and intellectual property rights see: International Potato Centre (1998).
- <sup>32</sup> In a personal conversation with Ximena Butron, an official of the TRAFFIC International office in Quito, Ecuador, in August 2000, the question of whether Decision 391's scope applies to these activities (direct industrialization of medicinal plants) was also raised. Ecuador's legislation includes Resolution 019 of 1997, which regulates research on, collection and export of wild flora and fauna for non-commercial purposes.
- <sup>33</sup> Press release by FAN Alientan Biopiratería Genética en Bolivia, June 2000.
- <sup>34</sup> The Sixth Complementary Disposition establishes that, in the case of natural protected areas, the access applicant will not only be obliged by Decision 391 but will also be required to comply with specific national legislation related to these protected areas. In this particular case, Decision 391 is very clear with regard to the applicable legal regimes (those of the common regime and of national protected areas).
- <sup>35</sup> By 1998, more than 50 countries had initiated ABS policy and regulatory processes (see Glowka 1998: 23).
- <sup>36</sup> Note the inclusion of biodiversity and access considerations in the recently approved Decision 486 of the Andean Community on a Common Regime on Industrial Property.
- <sup>38</sup> An example of how private initiatives should be supported and promoted is the case of Dr. Manuel Sandoval, an assistant professor for the Centre for Cardiovascular Sciences at the Albany Medical College. Dr. Sandoval travels every year to the University of Tingo Maria, in the Amazon region, and teaches students techniques for screening native medicinal plants. He is committed to teaching students basic skills and to establishing a research program, an aspect that clearly relates to bioprospecting activities. How could Decision 391 affect his activities? And would it support and stimulate further commitments by him to teaching local students and stimulating local students to research the potential of medicinal plants in the area?
- <sup>39</sup> This is not a comprehensive bibliography of literature on ABS and related issues. Rather, it focuses on a few documents and texts that address ABS and related issues mostly from the perspective of Decision 391 and the Andean region in particular.

# **PART THREE**

## **HARNESSING**

## **TRADITIONAL KNOWLEDGE**

## **FOR DEVELOPMENT**





# INDIGENOUS KNOWLEDGE FOR DEVELOPMENT: OPPORTUNITIES AND CHALLENGES

**Nicolas Gorjestani**

*“Indigenous knowledge is an integral part of the culture and history of a local community. We need to learn from local communities to enrich the development process.”*

James D. Wolfensohn, President, World Bank

## **Introduction**

Indigenous or traditional knowledge (TK)<sup>1</sup> is used at the local level by communities as the basis for making decisions pertaining to food security, human and animal health, education, natural resource management and other vital activities. TK is a key element of the social capital of the poor and constitutes their main asset in their efforts to achieve control of their own lives. For these reasons, the potential contribution of indigenous knowledge to locally managed, sustainable and cost-effective survival strategies should be promoted in the development process.<sup>2</sup> To facilitate the integration of TK into operations, the African department of the World Bank launched the Indigenous Knowledge (IK) for Development Program in 1998. This paper reflects on the programme’s experiences over the last three years and the steps that could be taken to further assist communities and governments in integrating indigenous knowledge into the development process.

## **The development case for indigenous knowledge**

The potential development impact of IK systems can be gauged by a few examples of what IK has already achieved. After 15 years of civil war, community leaders in Mozambique reportedly managed about 500,000 informal “land transactions” and helped in the settlement of about 5 million refugees and displaced persons in two years. Most significantly, they achieved this without direct external help from donors or central government. How did this happen? Traditional, local authorities relied on indigenous, customary laws to resolve potential conflicts arising from competing claims to land by returning refugees and those who had settled the lands during the civil war years. As a result, small holders were able to resettle quickly and resume farming activities and contribute to the growth of agricultural production.

In a Food for Work programme in Nepal, IK has reportedly proved to be a more effective agent of development than modern technology. A donor-assisted food distribution programme was incurring major losses of food along the distribution line. The project managers turned to the local community for solutions. It was jointly determined that use of local equipment (e.g. bullock carts), distributors and community-based supervision would be the most appropriate way to distribute the food. Hiring local bullock carts in place of the covered trucks operated by city-based companies provided additional income for rural communities and improved the transparency of the distribution process (Meagher, Upadhyaya and Wilkinson 2000).

In Senegal, for years external partners had engaged the country authorities with the objective of abolishing female genital mutilation (FGM), though with little success. Indigenous knowledge and empowerment of community groups eventually made a national impact. After attending an adult literacy course conducted by TOSTAN, a local non-governmental organization (NGO), a group of women from a village called Malicounda decided to address the issue in their communities. They reportedly convinced the traditional spiritual leaders to join their campaign against the practice. Within two years these empowered women had convinced 16 neighboring communities to abolish FGM. As a result of the growing impact of the Malicounda initiative, by the end of 1999 the practice was declared illegal in Senegal. The Malicounda initiative has spread to other groups in neighboring countries, where already more than 200 communities have abolished FGM (Easton 1998, 2001).

Indigenous institutions, indigenous appropriate technology and low-cost approaches can help increase the efficiency of development programs because TK is a locally owned and managed resource.<sup>3</sup> Building on TK can be particularly effective in facilitating outreach to the poor, as IK is often the only asset they control, and certainly one they are very familiar with. Utilizing IK helps to increase the sustainability of development efforts, because the TK integration process provides for mutual learning and adaptation, which in turn contributes to the empowerment of local communities. Since efficiency, effectiveness and sustainability are key determinants of the quality of development work, harnessing IK provides firm development underpinnings. Early indications point to significant improvements in development project quality if IK is leveraged with modern technologies. The UN Population Fund (UNFPA)-funded program in Uganda supports this proposition (see Box 1).

### **Box 1: Uganda – Reduction in Maternal Mortality**

In the Iganga district of Uganda, leveraging TK systems with simple and appropriate modern communications helped to dramatically reduce high maternal mortality rates. In the past, traditional care had not been able to assist in complicated cases, and the modern health service delivery system reached less than half the population of the district. To address the high mortality rates, local communities and officials built on local traditional institutions to improve the reach and impact of modern prenatal and maternal health-care services. The local initiative used and leveraged the system known and trusted by Ugandan women, which relied on the traditional birth attendant (TBA). The project provided TBAs with walkie-talkies to communicate with public health service workers. This enabled TBAs in remote areas to become the referral system to modern healthcare. In cases of complications or emergencies, the TBA could now call in a modern mobile unit or refer the patient to the rural health center. As a result, maternal mortality in the Iganga district reportedly declined by 50 per cent in three years (Musake, 1999).

Building on TK or IK systems also helps to empower local communities. Empowerment, especially of the poor, is a core objective of most development efforts. The reclamation of “sodic soils” in India (see Box 2) shows how farming communities locally leveraged indigenous and global knowledge to build a network of practitioners that engaged the agricultural administration and research in a dialogue of partners. The empowerment of these communities is demonstrated in the impact of their efforts, the application of their own knowledge to address a critical problem, and their success in engaging the help of authorities and donors.

### **Box 2: India – Reclamation of Sodic Lands**

In India, the World Bank-supported Sodic Lands Reclamation Project is a farmer-driven effort to increase household incomes. The major constraints were sodic soils, a result of inappropriate irrigation management and brown plant hoppers, which often destroyed up to 50 per cent of paddy and wheat crops. By combining local and modern knowledge, farmers applied gypsum; built contour bunds; leached the soil; started multi-cropping, green manuring, crop rotation and composting; and reclaimed over 68,000 hectares of land belonging to 247,000 families. They controlled brown plant hoppers with neem<sup>4</sup> extract, rice husk and green manure. After five years, paddy and wheat yields and incomes had reportedly risen by 60 per cent. With World Bank support, farmers created a local farmers school to incorporate these practices into the curriculum and outreach work. Today, farmers train and advise fellow farmers, reaching over 7,200 households in 65 villages. Recognizing and incorporating IK has, in addition to producing technical and economic results, helped create a farmer-owned training institution with tremendous credibility and outreach.

Building on such examples, several teams at the World Bank now increasingly seek to leverage global and local knowledge systems to adapt the design of Bank-supported projects and programmes to local conditions. Eventually, more communities will shape their own agenda by participating actively in the development dialogue and enhancing good governance from below. Helping communities to value their own knowledge and learn from it in turn enhances the Bank's own knowledge of the environment in which its programmes and projects are implemented. The Indigenous Knowledge for Development Program operates within this context.

### **The indigenous knowledge for development program of the World Bank, Africa region**

At the first Global Knowledge Conference in June 1997 in Toronto, government leaders and civil society groups urged the World Bank and other donors to learn from local communities. In concluding remarks to the conference, the vice president of the World Bank's African Region supported a vision of truly global knowledge partnership that would be realized only when the poor participated as both users and contributors of knowledge.

Around the same time, the results of client feedback surveys conducted by the World Bank in several African countries indicated that country authorities and stakeholders wanted Bank staffers to do better in adapting their highly regarded technical expertise to local conditions. The African Department of the World Bank responded to these challenges by launching the Indigenous Knowledge for Development Program in partnership with over a dozen organizations in 1998.<sup>5</sup>

The programme has developed a number of instruments and services for the capture, dissemination and application of these practices. These include the creation of an IK database of over 200 indigenous practices; a dedicated monthly publication, *IK Notes*, which appears in two international languages (English and French) and two local languages (Wolof and Swahili) and has over 20,000 readers; and a multilingual website.<sup>6</sup> The programme has also helped IK Resource Centers in eight countries to improve their national and regional networking capacity. For example, Uganda received advisory and financial support to draft a national strategy for the integration of IK into its national Poverty Eradication Action Program and grant funding to build capacity for the implementation of the strategy. Other countries have undertaken various activities to build on IK in agriculture, healthcare or education with the assistance of the IK Program. In cooperation with other agencies (the Swiss Agency for Development and Cooperation, and the Global Mechanism of the UN Convention to Combat Desertification), local communities have been supported in their efforts to share their IK through community-to-community exchanges. The IK Program has also brokered partnerships between scientists, legal experts and TK practitioners to support scientific validation of IK practices, and it has helped IK practitioners form national or regional TK networks.

The IK Program promotes the integration of IK systems into World Bank-supported programmes. The following examples demonstrate how the IK Program has helped clients and Bank staffers to integrate IK into development work. The Agricultural Research and Training Project in Uganda plans to investigate IK practices in agriculture to make them part of its outreach program. Examples of these practices include the use of small farm implements designed for the smaller cattle of Uganda, such as the improved Ugandan plough. In the Ugandan National Agricultural Advisory Services Program a team interviewed communities and farmers to devise a performance monitoring system based on IK indicators. In Malawi, the IK of farmers and fishermen will be merged with scientific knowledge to improve the sustainable use of Lake Malawi Basin resources. In Eritrea, IK practices in early childhood care were studied with a view to promoting and disseminating them. In Ethiopia, Ghana, and Kenya, projects are under way to promote medicinal plants as an integral part of health-related IK, so as to provide alternative sources of income and maintain and protect biodiversity.

The IK Program's role in these cases was to provide methodological input, brokerage of knowledge or funding for targeted studies. The lessons of these projects will be used to further mainstream and replicate the integration of IK during the preparation of future projects.

## Challenges ahead

Considerable progress has been made in promoting IK. Recognition of IK is increasingly becoming part of the development agenda; encouraging national initiatives and policies are emerging; civil society groups are forming a broad base of support; local initiatives are multiplying; and the number of development projects and programmes integrating TK is increasing. Yet substantial challenges remain. The priorities are to:

- encourage more countries to formulate and implement strategies for TK integration,
- enhance the capacity of national and regional TK networks,
- promote local exchange and adaptation of IK, and
- identify innovative mechanisms to protect TK in a way that fosters further development, promotion, validation and exchange of TK.

The following examples may demonstrate how some of these challenges can be addressed. Efforts are already under way to support national strategies in Kenya, Malawi, Tanzania and Uganda to mainstream IK. These are supported by the IK Program and, in the case of Tanzania, in partnership with the Food and Agriculture Organization's Links project (see Box 3).

### **Box 3: Uganda: a national IK strategy**

In July 1999, the Uganda National Council for Science and Technology initiated a study, with support from the World Bank, to explore the potential of utilizing IK in the agriculture and health sectors. This formed the basis for a national workshop involving policy makers, scientists, development practitioners, NGO and community-based organization (CBO) representatives, traditional healers and farmers to draft a national strategy and framework for action. This was the genesis of the Kampala Declaration<sup>7</sup> on Indigenous Knowledge for Sustainable Development. The Declaration urges the government to support the development of IK and planners to include IK in the national planning process. The strategy is to be implemented in several ways, such as including IK in Uganda's Poverty Eradication and Action Plan. The World Bank has provided an Institutional Development Fund grant to support the development of a national Centre for Indigenous Knowledge and the incorporation of IK into the operations of the health and agriculture ministries. A steering committee monitors the implementation process. The National Agricultural Research Organization has drafted a plan to incorporate IK into its activities (NARO 2001).

A global network of IK resource centers has emerged over the last 10 years. Its members are academic institutions, NGOs, CBOs and individuals engaged in the study, documentation, dissemination and advocacy of IK. Regional networks are continuously emerging, such as PELUM, formed in some countries in East and Southern Africa to share and combine experiences, skills and knowledge with regard to small-holder agriculture. Active, efficient and member-driven networks can be effective disseminators and advocates of IK.

### **Box 4: South Africa – local exchange and adaptation**

The Rooibos tea-growing farmers of Wupperthal in the Western Cape Province were successfully exporting their tea to Europe. An NGO, EMG thought that other tea-growing communities could benefit from their experience. In June 2000, over a dozen small-holder Rooibos tea-growing farmers of Suid Bokkeveld visited their neighbors for discussions on crop quality, processing and marketing. The outcome: the visiting farmers went back to their communities, shared what they had learned, set up a farmers' cooperative, improved their post-harvest processing and secured a \$15,000 order from a European importer.

At the local level, the IK Program has helped to strengthen community-based institutions by facilitating community-to-community (C2C) exchanges. A pilot C2C exchange was recently conducted in South Africa with support from the World Bank in partnership with the Global Mechanism of the Convention to Combat Desertification (see Box 4).

Although IK has proven its validity over the centuries, there are areas where scientific validation may be required prior to the sharing of such IK practices beyond the original context and location. An example is herbal medicine, where validation could help to provide assurances of safety and effectiveness (see Box 5).

#### **Box 5: Tanzania – traditional healers respond to HIV/AIDS**

In the Pangani District, traditional healers have treated the opportunistic diseases of over 2,000 HIV/AIDS patients using medicinal plants. Some terminally ill patients have reportedly lived five years longer as a result. The regional hospital has allocated a ward to these healers for treating and counseling patients. The IK Program supported an exchange of experiences between healers, people living with AIDS and staff members working with patients with similar groups across the country. A critical challenge is to leverage local and global knowledge systems to effectively resolve development problems. To facilitate this process, the IK Program brokered a partnership between the TANGA AIDS Working Group of Pangani and the US National Institutes of Health to cooperate on the scientific validation of the efficacy of these herbal treatments (Scheinman 2000).

These examples also demonstrate that functioning partnerships among a variety of stakeholders covering community-based organizations, NGOs, academia, the private sector, research, academia and government and donor institutions can significantly enhance the chances of success in the utilization of IK for development. This is especially true regarding the issue of intellectual property rights (IPR). The World Intellectual Property Organization (WIPO), a partner of the IK Program, has taken the lead in holding global discussions and building partnerships around the challenge of how to find innovative approaches to securing IPR for traditional/ indigenous knowledge.

Innovative approaches are necessary because existing arrangements may not be applicable to the specifics of IK: TK is preserved through oral tradition and demonstration rather than documentation; more often than not it emerges gradually rather than in distinct increments; only in rare cases is an industrial process concerned; and an individual inventor is unlikely to be identified. Thus, all the criteria for patenting a process or technology are missing. Some initiatives may help, such as encouraging local communities to register traditional practices. Practical, cost-effective and “indigenous” examples of documentation also exist. Other evolving forms of IK protection include material transfer agreements involving the provision of material (resources or information) in exchange for monetary or non-monetary benefits. Examples of fair and equitable benefit sharing between users and custodians of TK can be found in several countries today.

#### **Box 6: Cameroon – an anti-AIDS chemical from forest plants**

In Cameroon, the US National Cancer Institute reportedly signed a contract with the government following the discovery of a forest plant species containing a potential anti-AIDS chemical. Cameroon provides plant samples in return for payments that are used for community development projects (Posey and Dutfield 1996).



Regional agreements could also lead to cost-effective forms of protection for local communities. For example, the 1996 Andean Pact adopted by Bolivia, Colombia, Ecuador, Peru and Venezuela empowers the national authority and indigenous communities in each country, as the holders of traditional knowledge and resources, to grant prior informed consent in exchange for equitable returns. However, the need to address the issue of IPR over IK should not prevent the development and implementation of IK initiatives that benefit communities and the development process as a whole.

## Conclusion

Indigenous knowledge is a critical factor for sustainable development. Empowerment of local communities is a prerequisite for the integration of IK into the development process. The integration of appropriate IK systems into development programmes has already proved to contribute to efficiency, effectiveness and sustainable development. Like any other knowledge, IK needs to be constantly used, challenged and further adapted to the evolving local contexts. Supporting local and regional networks of traditional practitioners and community exchanges can help to disseminate useful and relevant IK and to enable communities to participate more actively in the development process. While innovative mechanisms for the protection of IK need to be developed, at the same time many IK practices can be integrated into local, national, regional or even global development efforts. However, experience has shown that this cannot be done by one institution acting alone. Therefore, partnerships are needed to support this process at all levels. The Indigenous Knowledge for Development Program of the World Bank will continue to champion IK and join others in their efforts to harness IK for development in a process of continuous learning from local communities.

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## Notes

- <sup>1</sup> The terms *traditional knowledge* (TK) and *indigenous knowledge* (IK) are used somewhat interchangeably in this discussion. The World Bank's Indigenous Knowledge programme refers to both these terms.
- <sup>2</sup> Indigenous knowledge is not confined to indigenous peoples alone – all communities develop their own body of knowledge over time.



- <sup>3</sup> While it may initially be more expensive to study and understand relevant IK practices, the costs of development programmes can be reduced substantially by utilizing local means or community-based resources (human and biophysical).
- <sup>4</sup> The neem tree (*Azadirachta indica*) has been used in India for centuries in a variety of applications related to human and animal treatments and as a means to control insect pests.
- <sup>5</sup> The initial partners were the UN Economic Commission for Africa, the Centre for Information Society Development in Africa, the International Development Research Centre (Canada), the International Telecommunication Union, the UN Educational, Scientific and Cultural Organization, the UN Development Programme, and the World Health Organization. The IK Program cooperates with other organizations, including the Centre for International Research and Advisory Networks at Nuffic (Netherlands Organization for International Cooperation in Higher Education), the Food and Agriculture Organization, the Global Mechanism of the Convention to Combat Desertification, the German Technical Assistance Corporation, the International Fund for Agricultural Development, the International Labour Organization, the Swiss Agency for Development and Cooperation, the UN Conference on Environment and Development, the World Intellectual Property Organization, and numerous NGOs and CBOs, mainly in Africa.
- <sup>6</sup> <http://www.worldbank.org/afr/ik/default.htm>
- <sup>7</sup> First published in *Indigenous Knowledge and Development Monitor*, 8 (1), March 2000.



# PROMOTING DEVELOPMENT AMONG THE INDIGENOUS LOITA MAASAI PASTORALISTS OF KENYA

Mark K. Ole Karbolo

## Introduction

This paper briefly reviews the status of indigenous development in Africa, focusing on Maasai pastoralists. It then presents a unique example of an indigenous approach to development – the Ilkerin Loita Integral Development Project in Kenya. It outlines the project's approach, activities, achievements and setbacks, and highlights key lesson learned that may be applicable in other indigenous-driven development work.

## Indigenous development in Africa

The majority of people in Africa, particularly those in the sub-Saharan region, are indigenous to the area. Even though most of them have undergone significant sociocultural changes over the past century, they have nevertheless retained some unique and indigenous characteristics. For example, they continue to occupy most of their ancestral land and to practice their cultures.

This paper focuses on African pastoralists, particularly Maasai pastoralists, to highlight the status of indigenous development in the region. African pastoralists are generally semi-nomadic with fairly intact cultures. Today, the pastoralists are a poor, marginalized minority group wherever they are found in Africa. They are faced with myriad problems including poverty, loss of land, cultural disintegration, economic exploitation and political oppression. They have been victims of western piecemeal development rhetoric and experimentation.

Indigenous development in Africa today is generally characterized by failed development and misguided initiatives. Very often the indigenous peoples' capability and ways of doing things are ignored. Most of the projects promoted, as well as many other development interventions, are largely of no consequence to the local peoples' proven source of livelihood. Most are capital intensive and in the end unsustainable. The programmes are often poorly designed, with unrealistic time frames. The local people are often treated as the participants rather than the main actors in their own development. In many cases the so-called development interventions tend to weaken or altogether replace the accumulated indigenous experience and traditional ways of doing things.

Definitions of development are reflections of world views. No such definition is value-free. In Kenya, development is often equated with nation building. The Loita Maasai have come to view development as changes that improve the livelihood and chances of survival of the community while at the same time enabling them to remain in harmony with their environment and maintain their rich traditions.

Culture includes a given community's accumulated and tested experience as well as its established ways of doing things. Culture is not static; it is dynamic. It changes as communities respond to new realities. Culture is both the foundation and the major point of reference in addressing development and all other changes.

For any development intervention to truly take root in indigenous communities, it has to be indigenized in accordance with their culture. In the Loita Maasai community, any new reality must be ritualized through a series of ceremonies and rites of passage before the community can own it. The ritualization process turns the new reality into a familiar and acceptable form that can be adapted and sustained by the community. In this way the culture of a given community comes to enrich, inform and direct the contents and direction of a given development intervention. This approach has had enormous impact on efforts to promote development among the Loita Maasai pastoralists.

## The Ilkerin Loita Integral Development Project

### **Overview**

The Ilkerin Loita Integral Development Project is a small, local and indigenous grassroots-based nongovernmental organizational structure owned, run and managed by the Loita Maasai pastoralists to promote their development and other forms of desired change. The project is situated in the five Loita locations of the Osupuko division of Narok district in the Rift Valley province of Kenya.

In 1972, the project was set up using funds and resources from the local pastoralists, the Catholic Diocese of Ngong, and the Local District Development Committee. Cebemo, a Dutch co-financing NGO, provided initial financial resources. After 10 years the project was formally handed over to the local people, who have since assumed full responsibility for it.

The project is managed by a 20-member Board of Elders representing all major stakeholders, cultural institutions and traditional forums of decision making. The day-to-day running of the project is entrusted to two project leaders who were appointed by and responsible to the Board of Elders. They are assisted by 60 indigenous staff members possessing a wide range of skills.

The mission of the project is to help the Loita Maasai pastoralists acquire the skills and capabilities they require to be the agents of their own development and to improve their life situation (in terms of themselves, their culture, their land and their livestock). The project's main task is to lay the necessary foundation in the form of awareness creation, organizational capability, skills, knowledge and essential support services based on which the Loita Maasai pastoralists can promote and manage their own development, using their culture as the major force and point of reference. Community training, empowerment and continued cultural awareness and practice have been the project's overall strategy.

### **Cultural Values**

The following core cultural values have shaped the design of all the project's development interventions:

**Community spirit.** The Loita Maasai community believes in maintaining a communal way of life where community members live in harmony and are mutually supportive and interdependent. This is exemplified by the African dictum "I am, because we are; since we are, therefore I am".

**Cultural dignity and identity.** The pastoralists of Loita seek to maintain and enhance their own human and cultural dignity and identity as a particular Loita Maasai community. Their lifestyles and accumulated experience are not inferior to others.

**Equality and justice for all.** The Loita pastoralists believe that all their community members (all human beings) are borne brothers and are equal regardless of their status, age, clan, gender, colour, race and education, and that all should have equal access to the available resources and opportunities in their community and society.

**Unity is strength.** Maintenance and enhancement of cultural unity and solidarity among the various age groups, clan systems, sections and other cultural institutions is essential in the community's collective efforts to carry out life tasks.

**Empowerment.** The community believes that individuals and groups have an inherent and Enkai (Masai God)-given power and potential to transform their life situations. The project seeks to better equip the community to take charge of and manage its own affairs.

**Participation.** The project's existence is justified by the need for its services in the Loita community. All members of this community have the responsibility and right to contribute to, benefit from and fully participate in all project matters and activities affecting their lives.

**Sustainability.** Individuals, groups and communities have a responsibility for the sound management of available resources in order to ensure their regeneration and perpetuity for the sake of posterity.

## Activities

The Project runs a number of activities and programmes that offer essential services to the community and at the same time serve as community training and demonstrational facilities. These include the following:

**Pastoralists Community Training.** The project runs a small pastoralists training centre where training in relevant fields is offered to local farmers and pastoralists.

**Livestock improvement and upgrading.** The project operates a 3,000 acre ranch that serves as a breeding and multiplication centre for improved breeds of sahiwal cattle, galla goats and dorper sheep. It also serves to demonstrate all aspects of traditional and modern animal husbandry practices and techniques for the local farmers. Many farmers from Narok and Kajiado have greatly benefited from this activity. Livestock marketing is also promoted, and a local weekly livestock market is now in operation at Olmesuti market.

**Veterinary care.** The project runs a community-based veterinary care programme covering the five locations. This programme consists of a mobile vet, six livestock medication shops, cattle dips, group hand spray pumps and training sessions for farmers. It works closely with the existing government veterinary services and traditional systems and helps to carry out local inoculation campaigns. Livestock diseases are now under control throughout the area of operation.

**Community health care.** This consists of both curative and preventive health care in Loita. The project has helped to build four small dispensaries. It also runs an ambulance service and mobile clinic in the remote areas. The programme works hand in hand with traditional healers and herbalists.

**Promotion of quality formal education.** The programme has built five primary schools in the five Loita locations and is currently helping the community to construct five nursery schools and adult literacy centres. The programme also motivates parents to send children to school and helps them obtain available essential learning materials such as textbooks. The project operates a scholarship fund that currently benefits over 250 college, secondary and primary boarding students from Loita. There are plans to sponsor 10 Loita boys and girls to attend local universities in the next year and to start a local secondary school. During holidays and after school, Maasai elders offer cultural education to the school children.

**Subsistence agriculture and local food security.** The project has worked closely with over 90 community work groups in the five locations to embark on subsistence agriculture as a way to boost local food security by supplementing their pastoral economy. Recently farm implements (ox ploughs, hoes, shovels, spray pumps, veterinary syringes, etc.) worth over 2 million Kenyan Shillings were donated and distributed freely to these community groups. As a result, the acreage under subsistence cropping in Loita has increased considerably. Weather permitting, the Loita community is now poised to meet over 60 per cent of its grain requirement, instead of purchasing it all from elsewhere. In this programme the pastoralists are also taught all aspects of proper land use and management.

**Annual field day.** Each year the project organizes an annual open day at its main centre. Over 2,000 pastoralists showcase what they have learned from the Ilkerin training programme and participate in many cultural, traditional and sports activities. Other neighbouring Maasai communities have also begun to participate.

**Women's programme activities.** The project has helped start and run seven women's groups in the Loita location. These groups engage in various activities including beaded handicrafts, milk processing, hides and skins marketing and subsistence agriculture. Most of the members of these groups enrol in adult literacy classes.

**Environmental management.** The Loita pastoralists have formed a trust to continue managing their environment using their cultural practices and system. This trust is now run separately from the project.

**Small-scale rural-based industries.** This programme helps local people run a number of small-scale rural industries that are based on locally available materials and labour.

**Tannery.** The project runs a small-scale rural tannery where hides and skins purchased from the local people are processed into leather. Part of the processed leather is sold, and part is used by the local women's groups. Each day 50 Maasai women are engaged

to make traditional Maasai beaded artifacts and souvenirs that are then sold, bringing needed income to these women and their families.

**Milk processing.** The local pastoralists run five small-scale rural dairy cooperatives. They process milk into cream, butter and ghee, which can be stored and then sold locally, especially during the season when there is less milk. Recently, these pastoralists have started to engage in organized livestock marketing on a cooperative basis.

**Honey refining.** Ilkerin also helps the pastoralists run and operate a small beekeeping and honey refining industry where wild honey is collected, refined, bottled and marketed locally in Narok. Modern and traditional beekeeping methods have been introduced and taught to farmers during workshops and seminars.

**Vocational skills.** The project's maintenance workshop trains a few young people each year in carpentry, masonry, motor mechanics and leather craft skills. The trainees are then expected to provide these services in their local communities.

### **Achievements**

Since its inception, the project and the Loita Maasai pastoralists have made a number of achievements in relation to their set goals. These achievements may be difficult to measure quantitatively and technically, but they are quite evident to the community. Some of these can be summarized as follows:

**Development of an indigenous organization.** Over the years the project has managed to make a successful transition from a small missionary-led activity to an organization fully owned and managed by the indigenous Loita Maasai pastoralists. The project serves a key need felt by the community: survival as a distinct group.

**Community organization.** Over the years the project has strengthened and revitalized a number of important cultural institutions and helped them evolve into fully functional community organizational structures. Such institutions have to do with the section, clan and age-group systems. This has enabled the community to tackle problems in a more organized manner.

**Land retention.** Compared to Maasai communities elsewhere in Kenya, the Loita Maasai pastoralists have kept their ancestral land relatively intact and preserved their environment. This is largely owing to their cultural solidarity and awareness.

**Livestock improvement.** The project has strengthened the main source of livelihood for the local pastoralists. Local livestock now have greater productivity and hardiness. The economic base and well-being of the local people have thus been improved.

**Cultural identity and dignity.** The Loita Maasai pastoralists have retained their cultural identity and dignity as a Maasai section. Adherence to cultural norms, values and practices is very high. This has provided a continued sense of belonging and identity.

**Lobbying and advocacy.** Over the years the project has successfully acted as a lobby and advocacy organization for the rights and values of the Loita Maasai.

**Understanding participation.** In the course of promoting development, the Loita Maasai have come to view themselves as the main actors in the process and all others as participants.

### **Setbacks and Problems**

A number of problems have been encountered in the course of promoting development among the indigenous Maasai Loita pastoralists. Following are some of the most important ones:

**Conventional development philosophies and theories.** Most of the prevailing development philosophies and theories are heavily influenced by western and capitalist thinking and notions of civilization. These clash with the project's definition and approach to development. This conflict has slowed project efforts and has made it very difficult to concentrate on an indigenous development approach.

Mainstream government development policies are also major constraints insofar as they are influenced and driven by multilateral donors like the World Bank and the International Monetary Fund. These policies are largely top-down as opposed to the project's bottom-up approach. Also, instead of being allowed to develop fully autonomous structures and approaches, the Maasai are often forced to integrate into the mainstream of national policies, practices and approaches.



*The influences of the forces of westernization.* The influences of Christianity and other aspects of westernization have posed major setbacks to efforts to evolve purely indigenous approaches. The Maasai culture is often condemned as “heathen and evil”, something that must be suppressed. Schools and churches are unanimous in teaching western values. Forces of change and modernization have also been major constraints to which many other tribes have largely succumbed, leaving the Maasai pastoralists to wage a lone battle.

*Recurring drought and famine.* Largely because of the weakening of the local peoples’ drought coping mechanism, the community has become more prone to drought and famines. This situation has often led to serious setbacks in the project’s work, as communities are distracted from development efforts.

### **Lessons**

Is the Loita experience, *mutatis mutandis*, replicable elsewhere among the indigenous communities? The following are some lessons that can be drawn from this project.

The positive power of culture is a *sine qua non* in developing an indigenous development paradigm. Culture, the accumulated experience of the indigenous people, is a positive and powerful force in promoting desired changes. To promote development by indigenous communities, it is useful to identify which of their cultural aspects can be harnessed as positive forces for development and which ones should be minimized.

Strengthening a people’s proven source of livelihood is an important part of an indigenous development paradigm. Projects and programmes should focus on and enhance the local people’s proven source of livelihood instead of replacing or undermining it. Livelihood security is of key importance to the community.

Use of cultural institutions and other organizational structures. It is important to support and work through organizational structures that are well understood and controlled by the local people, and to avoid creating unnecessary parallel structures. In the Loita project, giving prominence to and fully utilizing cultural institutions such as the Maasai territorial section, clan system and age group systems made it easier to organize the communities and to get them to act much more naturally.

### **Conclusion**

The Loita experience is a unique example of an indigenous approach to development. The project’s purpose, values, philosophy and strategy are heavily influenced by the cultural milieu of the local people. The project has been operating for many years, serving the real needs of the community. Its ultimate goal is to enable the indigenous Loita Maasai pastoralists to take charge of their own development using their accumulated experiences and culture as the foundation. Indigenous development paradigms must be based on indigenous values and world views.



# COMMERCIALIZATION OF TRADITIONAL KNOWLEDGE AND BENEFIT SHARING

Suman Sahai

## Introduction

The skills and knowledge of traditional societies, which encompassed all fields relevant to their lives, are being continuously lost and are now threatened by oblivion. This loss has become critical in the key sectors of food and health care, and its detrimental impact is becoming increasingly visible. Genetic erosion of germplasm is threatening the long-term sustainability of food production.

A share of profits from the commercialization of the skills and knowledge of traditional communities does not go back to these communities. This is true for many areas of their knowledge such as art, music, dance, patterns and designs, weaving, cuisine, agriculture, and health care. Many western popular musicians have borrowed from the indigenous music of Africa, India, and other regions rich in traditional music. However, typically the communities themselves do not share in the monetary benefits of these successes.

For every branch of knowledge, the most powerful forces keeping it alive are its use and the benefits, monetary or otherwise, that derive from it. The reason why the Indian systems of medicine (ISM), like Ayurveda, have survived for thousands of years is that average Indians use them regularly. Even after independence, when India adopted western-style allopathic medicine as the preferred official system of health care, the patronage of millions of common Indians ensured that indigenous health-care systems would remain alive and important.

This paper deals with the following topics:

- Traditional knowledge (TK) relating to bioresources, namely (a) agriculture; and (b) the Indian systems of medicine.
- Commercialization of TK, including the market for herbal products; the commercialization of forest products; commercialization in the new age, including developing a virtual marketplace for TK, making commercialization sustainable, and using biotechnology for conservation; and state support for the commercialization of TK. Also covered is the question of how to increase commercialization and the range of benefits that may be derived from it.
- An Indian example of benefit sharing with national and international users
- Gene Campaign's work to secure benefits for local communities

## Traditional knowledge relating to bio resources

### *Agriculture*

Modern intensive agricultural practices using high-yielding varieties have resulted in the loss of traditional varieties or land races of crops (e.g. millet). This has led to the loss of germplasm as well the associated traditional knowledge and skills for managing the germplasm efficiently and profitably. Indigenous skills in the field of agriculture are being documented by several organizations in India. The information covers the knowledge that farmers possess about seeds and farming practices, including water and pest management. Prominent non-governmental organizations (NGOs) involved in this work include Gene Campaign, The Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) and Beej Bachao Andolan.

### *Indian systems of medicine (ISM)*

In India the tradition of using plants for health care goes back several thousand years. Vedic texts going back to 3000 B.C. deal extensively with the medicinal properties of plants. Ayurveda

and Siddha are perhaps the longest continuously used healing traditions in the world. The ISM exist at two levels:

1. The classical system encompassing the well-documented codified systems like Ayurveda, Siddha, and Unani. These systems have textbooks and are taught in degree-granting colleges, and their practitioners are incorporated into the official health-care system.
2. The informal system of folk medicine (the Lok Parampara), which is passed orally from generation to generation. For this there are no books and little documentation; it is not part of the official system. These folk traditions are rich and diverse, their knowledge base is complex and they can heal a wide range of ailments.

The traditional practitioners of the Ayurvedic system (*vaidyas*) and the tribal healers are the backbone of health care for 80 per cent of the Indian population.

The All India Coordinated Research Project on Ethno-botany has revealed the wealth of folk medicine held by the tribal communities. According to the findings of this project, the communities have knowledge of the use of over 9,000 plant species. For healing alone, they use over 7,500 species of plants. This figure does not include the number of animals, insects, lichens, fungi, minerals, soils and so forth that are also used for human and veterinary health care.

Adivasi (tribal) areas, are repositories of knowledge systems now seriously threatened by waning interest among the younger generation. Stripped of its dignity, questioned by the official machinery, and disregarded by a westward looking urban India, tribal folk medicine will be lost, and with it the health security of rural India's people and livestock, unless urgent action at a practical level on a large enough scale is done to protect it and help it stay alive.

## **Commercialization of traditional knowledge**

### ***The market for herbal products***

An exploding herbal industry, its appeal ranging from pharmaceuticals, nutraceuticals and health foods to cosmetics, toiletries and ethnic products, is exploiting the knowledge base of indigenous and local communities. Loss of TK about healing traditions is taking away from local communities their trusted, affordable holistic health-care system.

Commercialization of Ayurveda, the dominant system of ISM, is about 100 years old. The oldest Ayurveda companies, still market leaders today, are Dabur in eastern India, Baidyanath in northern India, Dhoot Papeshwar in the west and the famed Kotakkal (which expanded to Sri Lanka) in the south. These groups were all established between 1890 and 1910. Prior to this, commercialization of Ayurveda was decentralized, practiced in a small and sustainable way by physicians. It was really more a service than commerce, the knowledge considered sacred and its practice imbued with spiritualism.

When trying to commercialize indigenous health-care preparations for the modern market, one faces inherent contradictions. Unlike allopathic medicine, which attempts to treat a symptom or a disease, ISM treats the entire patient. In its holistic form, the system is therefore complex and time-consuming and does not really lend itself to large-scale production and trade – certainly not to suit the lifestyles of western consumers. The early Ayurvedic industry therefore first selected for large-scale production formulations with wide potential application rather than those aimed at specific illnesses.

The challenges of commercializing for the modern market are primarily standardizing dosage and delivery, and increasing shelf life. Ayurveda prescribes formulations not only as tablets and syrups but also in several forms such as teas, decoctions (*kadhha*) and ash residues (*bhasma*). Ayurvedic preparations are dispensed in as fresh a state as possible to provide maximum efficacy. The challenge is compounded by the fact that proper administration of Ayurvedic medicine is as important as the medicine itself. Moreover, the prescribed cure is customized to meet the physical and psychic makeup of the patient. In modern times, the need to standardize dosage, simplify medicine administration, carry inventories and deliver mass health care militates against this health-care system's being cost-effective and efficient.

Companies' efforts have begun to increase the shelf life of herbal products. The controversial patent on a *neem*-based pesticide taken out by W. R. Grace in the United States was in fact a process patent to stabilize the *neem* emulsion and increase its shelf life. In Indian homes, traditionally, *neem* leaves are boiled fresh and used straightaway.

The global market for herbal products is exploding and is estimated to reach US\$20 billion by 2020. Four out of 10 people in the United States are using what they call 'alternative medicine', even when all the cost is not covered by medical insurance. In Japan the demand for pharmaceutical products has tripled in recent years, whereas for herbal products the growth in demand is over 15-fold. Similarly, in the European Union, sales of herbal products rose from US\$1.6 billion to US\$3.3 billion in 1998.

China and India are major sources of medicinal plants. Whereas China's annual sales of herbal products are around US\$4 billion (Rs. 180 billion), India holds only 2.5 per cent of global market share. This situation will have to change if herbal products are to become important enough to provide sufficient incentives to ensure the survival of the TK that supports them.

In India the latest available figures peg the annual turnover of herbal products at US\$0.5 billion (Rs 23 billion). Of this, the domestic market of medicinal plants is about Rs 3 billion and is divided in the following way:

- Condiments and food additives: 14 per cent
- Herbal extracts: 22 per cent
- Crude drugs: 45 per cent

The export market for medicinal plants appears to be growing faster than the domestic market. The cosmetics and aromatherapy industries are important areas where Indian medicinal plants and their value-added derivatives (extracts, essential oils, etc.) have a high, as yet untapped market potential.

The main medicinal plants exported from India are shown in Table 1, along with an indication of which part is exported. The knowledge of how to use these plants is directly derived from TK.

**Table 1. Medicinal plants exported from India**

S. No.	Plants	Parts exported
1	<i>Plantago ovata</i>	Seed & husk
2	<i>Cassia angustifolia</i>	Leaf & pod
3	<i>Rheum emodi</i>	Rhizome
4	<i>Inula acemosa</i>	Rhizome
5	<i>Rauwolfia serpentina</i>	Roots
6	<i>Hedychium spicatum</i>	Rhizome
7	<i>Zingiber officinale</i>	Rhizome
8	<i>Colchicum luteum</i>	Rhizome & seed
9	<i>Valeriana wallichii</i>	Rhizome
10	<i>Acorus calamus</i>	Rhizome
11	<i>Adhatoda vasica</i>	Whole plant
12	<i>Juglan regia</i>	Bark
13	<i>Punica granatum</i>	Flower, root, bark
14	<i>Berberis aristata</i>	Root
15	<i>Juniperus communis</i>	Fruit
16	<i>J. macropoda</i>	Fruit
17	<i>Heracleum candicans</i>	Rhizome
18	<i>Picrorhiza kurroa</i>	Root
19	<i>Aconitum species</i>	Root
20	<i>Saussurea lappa</i>	Rhizome
21	<i>Swertia chiraita</i>	Whole plant
22	<i>Podophyllum emodi</i>	Rhizome

### ***Commercialization of forest products***

In India, local tribal (Adivasi) communities have the exclusive right to collect non-timber forest produce (NTFP). This right acknowledges their customary role as conservers and holders of knowledge. These forest products (excluding timber) range from nuts, flowers, gums, resins, and medicinal and aromatic plants to leaves and fibers, honey, wax and other products. With the rising importance of herbal products, the sale of NTFP has become an important source of revenue and an incentive to conserve the resource base.

In Madhya Pradesh, a state with 35 per cent forest cover and a large Adivasi population, the collection and sale of forest produce has been particularly well organized. The system is transparent and fair and designed to benefit the community rather than the government. In recent years, a new concept involving so-called Peoples' Protected Areas (PPA) is being tried out in some areas of Madhya Pradesh. PPA are selected locations where training in sustainable harvesting and forest and biodiversity conservation are linked to income generation for the Adivasi. Income from forest produce obtained through the PPA is rising every year; in one location, it was over Rs 6 million in 2001. An important forest product found in Madhya Pradesh is *tendu* leaves, which are used for rolling *bidis* (small cheroots). In the year 2000 alone, *tendu* leaf collection fetched the Adivasi in Madhya Pradesh Rs 2,000 million – the equivalent of roughly US\$45 million. With this range of benefits accruing to them, local communities acquire a strong interest in keeping alive their knowledge.

### ***Commercialization in the new age***

#### *The virtual marketplace for TK*

An interesting new development in commercializing TK is the use of the Internet, which gives access to a far larger market than could be dreamed of thus far.

Shambala Botanicals/Xavier Exotic Herbs in Kathmandu recently announced the availability of “Seventh Heaven” Kathmandu Temple Kiff®, “Seventh Heaven” Prosaka Tablets® and “Seventh Heaven” Gentle Ferocity Tablets® for “Blissful Regressions of Vexatious Depressions” and many other conditions. These and other products,<sup>1</sup> the Web site announced, are “an amalgamation of high concentrates of rare euphoric herbs”. Whatever the validity of these claims, here is an example of an interesting range of products targeted at a wide variety of ailments. Even more interesting is the fact that the Internet is being used to reach global markets.

In an initiative by a Bangalore-based information technology company, fruit and vegetable sellers across India are being invited to advertise and sell their products on the Internet. The company plans to set up a network of kiosks at 36 *mandis*<sup>2</sup> so that local producers can reach distant urban consumers and get the highest possible prices for their products by eliminating the middleman.

The Indian Tobacco Company, which is linking its competencies in agriculture and information technology to create what it calls the e-Choupal<sup>3</sup> Web site, has undertaken a similar project. As part of a project in Delhi, Gene Campaign is setting up a site that will have detailed information on the various aspects of TK, including cultural phenomena like language, customs, music, marriage ceremonies and so forth, as well as TK in areas such as textiles, weaving and design, healing practices, vegetable dyes and metallurgy.

Information on this site is in the form of a database, which will help to commercialize TK and provide tangible and intangible benefits to the creators and holders of this knowledge. As is customary for databases, an entry fee can be levied for access to the site. However, apart from the tangible benefit of income, intangible benefits accruing from creating such databases include acknowledgement of the skills and identities of the creators and holders of TK, which gives quasi-formal recognition to the ownership of such knowledge systems. The information in the database will be valuable for research and education; the database itself may serve as a TK archive for libraries. Cultural knowledge is constantly sought by universities and other institutions teaching subjects like anthropology, folklore, history and the social sciences. The Sikhs



have already set up a Khalsa Web site, which presents information on the Sikhs' history and religious and cultural practices.

Through their site, Adivasi can sell their knowledge in areas such as textiles, weaving and design, healing practices, vegetable dyes and metallurgy as well as art and music. Artisans in Gujarat have already begun using the Internet to sell their handicrafts. A noteworthy success story from Gujarat is that of the tie-and-dye tradition of textiles. Practitioners of this method of dyeing silk and cotton fabric have been posting their designs on the Internet and connecting with international buyers.

The Internet could eliminate many of the hurdles that local communities have faced in marketing their produce, but there is also a need for caution, at least in the first few years until the medium is mastered. Intermediate enabling organizations such as NGOs can save communities from being exploited by unscrupulous elements.

### *Dangers of commercialization*

While commercialization of herbal products and the ensuing financial gains will definitely prove a powerful incentive to communities to retain this knowledge base, extreme care is needed to prevent overexploitation of the underlying resource base. There have been glaring examples of losses due to such overexploitation. Thus, interest in the Himalayan yew (*Taxus baccata*) as a source of the anti-cancer drug Taxol has led to a devastation of the yew forests in Himachal Pradesh and other hill regions.

### *Making commercialization sustainable*

In order to ensure long-term gains and prevent over-harvesting, sustainability will have to be built in at several levels. Key elements for supporting sustainability are:

- *Conservation.* *In situ* conservation is the best form of conservation; however, a consolidated approach is needed for it in the form of protected areas, sacred groves and gene banks.
- *Generation of awareness* about the importance of and need for sustainable use
- Revised collection policies made with the consent and participation of the concerned communities, which should be accountable to national agencies (such as biodiversity authorities) entrusted with conservation.
- *Training in sustainable harvesting.* Training people in the collection of plant material from the wild to ensure that plants are left viable and natural populations maintained. Unless the part required is the root, the whole plant should not be destroyed in the collection of parts (e.g. leaves, fruits, flower, bark, gums and resins).
- *Value addition.* Training local communities in simple first- and second-degree processing to add value. Cleaning, sorting and selecting of material as well as sun or shade drying, cutting and powdering are examples of simple processing procedures for adding value to a product. This will decrease communities' need to collect large volumes of materials in order to earn a reasonable amount of income.
- *Cultivation of medicinal plants.* There should be a cultivation policy for medicinal, aromatic and other commercially important plants for large-scale commercial use in domestic and international markets. Natural collections should not be used for industrial uses; instead, plants used for various products should be cultivated. Only local communities, traditional healers, academics, researchers and those involved in documentation and archival work should be permitted to use natural collections. An aggressive strategy involving NGOs, universities and research institutes should help the industry to develop agro-technology packages for medicinal plants of interest. The industry should be required to invest in this development since it is the principal beneficiary.
- *A clear national IPR policy.* A clear-cut national policy on IPR with respect to herbal products and their trade should be developed. It should include elements of transparency, sustainability, benefit sharing and legal protection.
- *Monitoring* the health of natural populations of plant species and ecosystems and checking the status of frequently used species is important. This monitoring can be done by civil

society organizations (e.g. Panchayati Raj), state and national biodiversity boards, NGOs and students.

### *Using biotechnology for conservation*

Biotechnology has opened up new ways of assisting conservation. It can be useful in the assessment of monitoring (especially of the status of the active oil or alkaloid conferring a curative property) and as a method for analyzing new genes for possible therapeutic uses. DNA techniques<sup>4</sup> can be used to identify populations or individuals with desirable traits, similarities between genotypes and relatedness among taxa. The last approach is being tried to identify which other plant families have the same properties as *Taxus baccata*, so that new sources for Taxol can be identified and the pressure taken off *Taxus baccata*.

DNA technology can also be used to assess collections in order to identify gaps, determine which genotypes are of high priority for conservation and avoid redundancy in gene bank collections. Recognizing the importance of conserving medicinal plants, especially from habitats under threat, the Indian government has recently established a network of three national gene banks dedicated to medicinal and aromatic plants.

### **State support for the commercialization of TK**

In India, governments at the national and state levels have provided incentives and infrastructural support for the production and marketing of products derived from TK. Central Cottage Industries, a showcase of textiles and handicrafts from all regions of India, is a popular destination for domestic buyers and tourists and exports large volumes of high-quality products. New initiatives are being taken to incorporate indigenous skills, designs and motifs into products for the international market. A new initiative supported by the United Nations Development Programme (UNDP) has led to a whole new range of carpet designs based on India's 5,000-year cultural heritage.

The art of using vegetable dyes is being revived in the textile, carpet and handloom sectors. India's long and continuous tradition of using plants and minerals for dyeing became marginalized after the advent of chemical dyes, but the process never disappeared, continuing to be used in the handloom sector as well as in handicrafts.<sup>5</sup> Now that Azo dyes have been banned as possible carcinogens, an international policy should be developed for banning chemical dyes worldwide and replacing them with vegetable dyes.

*Khadi* is the handspun cotton adopted by Mahatma Gandhi as the symbol of India's determination to be independent and self-reliant. The Khadi Gramodyog Bhawans are a network of sales outlets across India run by the Khadi Village Industries Commission (KVIC). The KVIC sells handspun cotton, silk and woolen materials and all kinds of products made in Indian villages. These include honey collected by Adivasi, sandalwood oil, *agarbattis* (incense sticks) made from the fragrant agar wood of the north-east, wild silk, objects made from *lac* collected from the forest and hundreds of kinds of craft objects. The KVIC, perhaps more even than the national and state handicraft emporia, is a demonstration of India's commitment to preserving its TK base by providing markets for its products in the country and outside.

### **Increasing commercialization and the range of benefits**

#### ***Standardization and quality control***

Regulation and standardization of the quality of herbal products and medicines is necessary in order for them to compete in international markets. The urban market will require products to have a longer shelf life than the fresh preparations dispensed in classical Ayurveda or the fresh preparations of biopesticides.

Value addition in the form of better processing and more eye-catching packaging can increase the appeal and durability of a product and also increase the resulting income for the communities making it.

Another good strategy for increasing the commercial appeal of products is to analyze their relevance to current health concerns. For example, traditional products that are known to suppress appetite and reduce weight could be marketed successfully as weight-loss formulations. (*Phytolaca* is one such plant known in homeopathy.) Similarly, the stress-fighting properties of aromatic oils and herbal teas are beginning to attract urban users in this extremely stressed-out world. In today's health-conscious climate, natural substitutes for chemical products, have a bright commercial future if they are marketed scientifically and with a guarantee of quality.

### **Creation of new markets and market niches**

Indigenous knowledge in different societies can potentially lead to the development of a range of products that lend themselves to a different kind of marketing and therefore to better incomes for the holders of that knowledge.

**1. Vegetable Dyes.** Recent efforts to revive the systematic use of vegetable dyes provide a good example of creating a new market for an indigenous skill. Some agencies have prepared a list of dye-bearing plants known in indigenous tradition, and the Uttar Pradesh Handloom Corporation is making efforts to extract and market pigments derived from vegetable dye sources. Vegetable dyes could solve the problem of increasing allergies to chemical food additives. Already, natural plant-based colors are replacing chemical coloring agents in foods. Two examples of this are the red color in *Bixa orellana* seeds and the yellow-colored carotene in marigold flowers. These are used respectively in the dairy and poultry businesses on a large scale – in the former, for coloring, and in the latter, to produce eggs with yellow yolks.

**2. Traditional drinks.** A traditional Mexican alcoholic drink called tequila, made from the juice of the blue agave cactus, has become a popular drink in recent years. *Mahua*, a tree found in Indian forests, especially in the eastern region, is in many ways the mainstay of Adivasi livelihoods. Its flowers are dried and eaten in times of scarcity, its seeds provide a high-grade edible oil and the juice of the fleshy flowers is fermented and distilled to provide flavored alcohol. Similarly, in Goa, the pulpy fruit from which the cashew nut hangs is the source of the popular *feni*, a drink scarcely known outside Goa and the Konkan belt of western India. *Mahua* and *feni* if professionally packaged and marketed, could translate into big money for local communities from domestic and global sales.

**3. Herbal contraceptives.** While there is TK about plants and plant products with contraceptive properties, this area is relatively unexplored TK is a particularly rich resource for dealing with maternal and child health care and for handling stages of puberty, pregnancy, lactation and menopause. Indigenous societies from India to the South Pacific have known how to prevent pregnancy with the use of certain foods and plant extracts. There is tremendous commercial potential here for a safe and reliable herbal contraceptive, once such products have been standardized.

**4. Application of modern designs to traditional materials and crafts.** Traditional communities possess a sophisticated repertoire of skills, designs and knowledge of materials. These are used to make decorative, useful everyday objects adapted to the lifestyles and dwellings of rural and Adivasi people. If these skills and materials could be meshed with modern design, the resulting products could reach large national and international markets. A case in point are baskets woven in Zimbabwe and Rwanda, which have found appreciative western audiences and sell for good money.

In India bamboo, palm leaf, wheat stalk, reeds and other plants are used to make various objects including furniture. *Moonj*, a rope woven from a certain grass of that name, is used to weave *charpais* (beds) and *machias*, which are low stools used by women for cooking and household work. A reed called *senta* is popular for making high stools and full-backed chairs. These materials and skills can be used to create utility objects for the home and modern furniture for a vast middle class.

## The economic value of TK and benefit sharing

Today, despite the increasing commercialization of genetic resources, the benefit to communities from international markets is negligible. For example, the twigs of the *tetu* tree (*Oroxylum indicum*) are traded in India at Rs. 9/kg (about US\$0.20/kg), whereas its extracts fetch Rs. 500,000/kg (US\$15,000/kg) on the international market. This example indicates the substantial value that may be added as raw material moves up the value chain and the extent to which revenues could be made available to the owners and custodians of the raw material through a proper and equitable system of benefit sharing. The amount that communities across the world actually receive as their share of the benefits must reflect the reality of this staggering sum.

### ***A formula for benefit sharing in the pharmaceutical industry***

According to figures released by the international pharmaceutical industry, it costs the industry US\$500 – 600 million to introduce a new drug on the market. This is the basis for the industry's call for that stringent protection of IPR. When a company pirates a product based on TK and converts it into a medicine, it has “acquired” a product that may be worth hundreds of millions of dollars.

Take the American patent on *Phyllanthus amara*, a plant known in India and some other parts of Asia for its curative and regenerative properties with regard to the liver. A liver medicine based on this or any other medicinal plants that have been taken without compensation, along with the accompanying TK, from developing countries would be worth hundreds of millions of dollars. Even if one were to set aside US\$40 – 50 million or even US\$100 million to cover the costs of standardizing the product for the western market, marketing and packaging it, and so forth, the revenue lost by communities would still amount to something like US\$400 – 500 million. This amount should form the basis for calculating benefit sharing in the pharmacological sector. If the community's share in the form of royalty payments were to be calculated at 5 per cent of US\$500 million, at a flat rate it would total US\$25 million. To this should be added a percentage of the annual profits earned year after year by the commercial enterprises marketing the medicines derived from the plants under discussion and the TK for their use.

### ***A formula for benefit sharing in agriculture***

In the agricultural sector, sales of seeds bred using farmer varieties will not generate the kinds of revenues that prevail in the pharmacological sector. Benefits accruing to farmers will therefore be based on more modest profits and will depend also on the nature of the commercial end products. Seeds are for a crop associated with a high-end commercial product should yield a higher benefit than those used for a standard crop.

A fungal blight almost wiped out the musk melon crop and associated industry in California. Since almost all the melon germplasm in California comes from India, when the fungus attacked, resistant varieties were brought from India and the musk melon crop along with its downstream industry was saved. A profit worth millions was made by relying on resistant varieties from India. Benefit sharing with the farming community in India should be done not only for the direct profits saved in a situation such as this, but also for all profits made in downstream commercial ventures emanating from such a situation.

In the current development of transgenic crop varieties, the most well-known of which is the vitamin-enriched ‘golden rice’, benefit sharing will have to be calculated on a different scale than for the usual high-yielding varieties. Golden rice derives from a rice variety into which provitamin genes from daffodils have been introduced. After its development in the lab, the life science corporation Astra Zeneca acquired all rights to commercialize golden rice in the developed world. Zeneca rightly believes that there is a large market for golden rice among health-conscious western consumers. Its strategy is to market this rice in the affluent northern hemisphere as a nutritionally enhanced food with tremendous health benefits. The volume of profits from a nutraceutical product like this would probably be closer to those seen in the pharmaceuticals industry than those of the seed industry, and the benefit-sharing arrangement should

reflect this. A share of profits must accrue to the farming community from where the rice germplasm that was ultimately converted into golden rice was taken.

Benefit sharing both in the herbal drug sector and in the agriculture sector should also include transfer of technology. For example, products like resistant melon varieties and golden rice should be made available to the countries where the parent or source varieties originated, without any IPR restrictions.

### ***Benefit sharing: An Indian example***

**1. The plant *Arogyapacha* and the traditional knowledge of the Kani community.** During an ethno-botanical expedition in the tribal region of the Western Ghats in the state of Kerala, a team of scientists encountered the Kani community's practice of eating seeds of the wild plant *Trichopus zeylanicus*, locally called *arogyapacha*. The seeds boost energy and help people through periods of physical exertion.

*Arogyapacha* was scientifically investigated, and finally a scientifically validated and standardized drug based on the Kani knowledge of *arogyapacha* was developed. The drug, called Jeevani, was released for commercial production in 1995. While transferring the technology for production of the drug to a pharmaceutical firm, Trivandrum Botanical Garden agreed to share the license fee on a fifty-fifty basis. In addition to this, two per cent of the royalties from sales to go to the tribal community. This model of benefit sharing is rare in that, instead of being exploited, the tribal community receives a fair share of the benefits derived from using its knowledge.

The Kanis have since then been helped to register a trust, which is fully owned and managed by the Kani tribe. About 60 per cent of the Kani families of Kerala are now members of this trust. In February 1999 the amount due to them (Rs. 6.5) was transferred to the trust, and now 50 per cent of the royalties received every year from the company will also be transferred to the trust. As per the rules of the trust, the license fee and royalties received on account of the drug Jeevani will be in the form of fixed assets of the trust, and only the interest accruing from this amount can be used by the Kanis for welfare activities. This model was developed over a period of about 12 years from 1987 to 1999, always in full consultation with the Kani tribe.

**2. Other kinds of benefit sharing.** Following are some recommendations on ways in which benefits may be shared.

- a) Database access fees: Communities should be beneficiaries of revenues collected from databases containing TK. The Indian government has started a compilation called the Traditional Knowledge Digital Library (TKDL), which contains public-domain information about important medicinal plants. Similar databases should be developed from the biodiversity registers that are documenting the availability and status of bioresources. Databases containing information on the knowledge of indigenous (Adivasi) communities<sup>6</sup> will also need to be set up. All such databases should levy an access fee after proper execution of prior informed consent and material transfer agreements. Part of this access fee should be paid into a fund for communities.
- b) Bioprospecting and research fees: Companies that wish to have a license to explore India's bioresource base for commercially exploitable products will be required to pay a prospecting fee, which should also go into a community fund. Similarly, when research programs are expected to yield commercially interesting results in the form of financial gain or new technologies, communities should be beneficiaries.
- c) Milestone payments: Prospectors should be required to pay a fee for every "milestone" reached during the research,<sup>7</sup> so as to ensure a benefit to communities if their knowledge has been used, even if the product does not reach the market or the users are not able to commercialize the results.
- d) Gene bank access: The genetic material of crop plants, rare varieties, medicinal plants and other economically important plants is stored in the National Gene Bank located in Delhi. This material is held in trust for the Indian people, especially the communities that have contributed the bulk of the material. An access fee should be levied on users who take this material for commercial purposes, but research material should be exempted.



This issue has acquired greater significance now that India will be enacting a Plant Variety Protection and Farmers Rights Act. Under this act, breeders of new plant varieties (using genetic material from public sources like the gene banks) will get a breeder's right and will be entitled to make profits. They must be required to pay for germplasm they access, whether they succeed in getting a new variety commercially established or not.

- e) Non-monetary benefits: It is important to understand that both monetary and non-monetary benefits are important. Bestowing recognition, awards and public honor on the holders of traditional knowledge and material is in many cases even more important than sharing monetary gains.

### **Benefit sharing with national and international users**

This paper has discussed benefit sharing in situations where international users access bioresources and TK. This is also in the emphasis of the Biodiversity Act. However, it is equally important to establish conditions of use for Indian individuals and companies. Here a distinction will have to be made between different kinds of users. It is recommended that whereas traditional healers and practitioners such as *vaid*s and *hakim*s should continue to exercise their traditional rights, those engaging in large-scale commercialization should be required to pay a part of their profits to the community.

Companies like Dabur and Baidyanath and newer entrants such as Maharishi Ayurveda and Hamdard, as well as all the other companies belonging to the Ayurvedic Drug Manufacturers Association that have a turnover of millions of rupees, should be required to enter into benefit-sharing arrangements. Shahnaz Hussain, a leading Ayurvedic cosmetics firm that has a large domestic and export market, and others like it should be required to pay back to communities at least some part of the money they have made using their knowledge.

### ***Who should receive the benefits?***

There are many proponents of rewarding individuals and individual communities for the use of TK. This approach has also been implemented in India with the Kani tribe of Kerala. This paper does not support this approach and instead recommends that a national fund, or even regional funds, be set up to collect revenue on behalf of communities. Exceptions could be made where individuals are clearly identified with an innovation or some special knowledge. This fund could be called a community gene fund or community knowledge fund (CKF), and the money collected would naturally be accessible only by communities.

Knowledge accumulated and conveyed over the years is the collective result of the efforts of many people, frequently spanning generations, and individual innovators are impossible to identify. Also, there are large knowledge overlaps between and among communities. People acquainted with similar flora will develop similar knowledge regarding their use. In addition, the exchange of knowledge and ideas has been going on for so long that it will be difficult, except in rare instances, to isolate a particular knowledge base. Nor is it desirable to do so.

The conditions for accessing money from the CKF could be based on the research fund system used by universities and research institutions to provide research grants. Briefly, a researcher submits an application that is peer reviewed, and, if the research project is deemed sound, money is granted from the fund. Grants should be weighted in favor of communities that have a particularly good conservation record or are rich in TK.

This model would see communities accessing the CKF for anything from conserving a habitat, digging a bore-well or building a link road to setting up a primary school for girls. The use of the money should not be restricted to conservation. Since communities earn the money, they should be free to spend it in any way they want. In any case, it is highly likely that communities with a good record of conservation will invest more money in it. Apart from that, earning money from bioresources will automatically provide an incentive for conserving them.



### **Implementing benefit sharing**

In India, as in other developing countries, returns to the community from commercial exploitation are very scant. This no different to what happens elsewhere. What is needed is a strong and clear-cut national policy and strictly monitored collection protocols. The private sector should be motivated and encouraged to bridge the vast disparities in benefits. If that does not work, sanctions may be necessary.

To ensure that local communities continue to have access to the natural resources they required, the extraction activities of the private sector must be curtailed. *Sabai* and *bhabar* grass are collected by communities and used for making ropes and twine to weave beds. Similarly, bamboo is collected for constructing houses and for making ladders and baskets. Paper mills also use these resources as raw material. Proportional sharing of resources must be provided for in policy so that industry is not the principal beneficiary and communities do not suffer deprivation.

National legislation and international negotiations will be necessary to ensure that communities are able to derive benefits. India's Geographical Indications of Goods (Registration and Protection) Act of 1999, which derives from Articles 22, 23, and 24 of the World Trade Organization's TRIPS Agreement, asks for the recognition of traditional Indian products like basmati rice, Darjeeling tea, Shahi litchis, Dasherri mangoes, and so on. International acceptance of these conditions provides markets for communities that have traditionally grown these varieties.

### **The need for international action**

To support equitable compensation for TK and the sharing of benefits derived from it, the international community should do the following:

- Implement the relevant provisions of international commitments such as the International Labour Organization's Convention, the International Undertaking on Plant Genetic Resources, the Guidelines for Protection of Folklore issued by UNESCO and the World Intellectual Property Organization, the United Nations Draft Declaration on the Rights of Indigenous Peoples, and the Convention on Biological Diversity (CBD). The issues being disputed are well known.
- Remove Article 27.3.b from the TRIPS Agreement. To start with, the demand for patents on life forms should be withdrawn.
- Maintain countries' flexibility to draft their own *sui generis* legislation for plant varieties by insisting on compliance with the conventions of The International Union for the Protection of New Varieties of Plants (UPOV).
- Implement Article 29 of the TRIPS Agreement, which requires disclosure in the case of patent applications, to genetic resources and TK used in inventions for which IPR are claimed.
- In the CBD, give primacy to conservation, since that is what will conserve the TK base and continue to provide livelihoods and opportunities for value addition to communities.
- Invoke Articles 8(j), 15, 16, 20 and 21 of the CBD in all discussions relating to *access* to bioresources.
- Use all possible national measures to strengthen the Cartagena Protocol on Biosafety to prevent contamination of genetic resources until the safety of genetically modified foods can be established scientifically.
- Enhance the scope of Article 23 of TRIPS to strengthen protection of geographical indications for goods other than wine and spirits, such as Darjeeling tea.
- Ensure that any agreement on databases (e.g. the proposed Database Treaty, which will govern databases like the Indian TKDL) recognizes the ownership of communities and includes provisions for prior informed consent, multilevel trade agreements and benefit sharing when access is granted.

### **Gene Campaign's work on securing benefits for local communities**

The traditional varieties and land races of rice, millets and pulses from rain-fed, flood-prone and marginal lands are being collected, characterized, multiplied and conserved. The work is being carried out in farmers' gene banks, which have a medium-term viability of five to seven years in Uttar Pradesh, Madhya Pradesh and Bihar. Farmers cultivating traditional varieties face difficulties finding seed, since this is not available in the formal agricultural system. These gene and seed banks will provide a seed source for such farmers.

The Western Ghats (Maharashtra) region of India, along with the northeast, is an important centre of genetic diversity, recognized as one of the 12 megadiversity centers of the world. Mapping the location for wild relatives of crop plants in the upper Western Ghats is being done with the help of local communities. The plan is to identify regions where these wild relatives are found as "gene reserves" and flag them for first-degree conservation.

Agro-technologies are being developed for commercially important medicinal and aromatic plants to establish the basis for sustainable commercialization. Herbal gardens and nurseries are being established for use by traditional healers. This work is being done in the Adivasi belt of South Bihar and Northern Madhya Pradesh.

Buy-back arrangements are being negotiated with the herbal drug industry. This is being done for the plant species *Java citronella*, *Palmarosa*, *Vetiver*, *Senna angustifolia* and *Acorus*.

In the project in Madhya Pradesh, the medicinal plant garden (with over 125 medicinal and aromatic plants) is providing raw material to communities for making powders to treat fevers and diarrhea and soap for eczema. These products are sold to a local hospital run by missionaries. Gene Campaign has also been instrumental in strengthening the herbal health department in this hospital.

Reformed bioresources policies for securing benefits and protecting the interests of the farming and local communities through advocacy includes the following:

- A strong Farmers Right in the 'Plant Variety Protection and Farmers' Rights Act' not only allows the farmer to retain seed from a harvest of a breeder's variety for the next season; it is the only *sui generis* legislation (draft) in the world that grants farmers the right to sell seed even of protected varieties, provided it is not branded and is in generic form. To enable a share of benefits to be derived from new varieties, there are provisions for a national gene fund to which breeders will have to contribute in return for using farmer varieties. The legislation requires full disclosure of the source and origin of varieties and complete passport data from breeders. The penalty for non-disclosure is a heavy fine and /or a jail term.
- *The Convention of Farmers and Breeders as an alternative to UPOV*. Gene Campaign has lobbied against India's joining UPOV because the UPOV system is not suitable for developing countries. We do not have big seed companies in essential seed sectors, and our major seed producers are farmers and farmer's cooperatives. UPOV laws are formulated by countries with industrial economies, not agricultural ones. In developing countries, farmers play a significant role as breeders of new varieties. The alternative to UPOV drafted by Gene Campaign and CEAD, the Convention of Farmers and Breeders, (CoFaB), seeks to:
  - Provide reliable, good-quality seeds to small and large farmers
  - Maintain genetic diversity in the field
  - Provide protection for breeders of new varieties in the market, without prejudice to public interest
  - Acknowledge the enormous contribution of farmers to the identification, maintenance and refinement of germplasm
  - Acknowledge the role of farmers as creators of land races and traditional varieties, which form the foundation of agriculture and modern plant breeding
  - Emphasize that tropical countries are germplasm-owning countries and the primary source of agricultural varieties
  - Develop a system whereby farmers and breeders have recognition and rights accruing from their respective contributions to the creation of new varieties

- *A strong, participatory structure for regulating policy on biodiversity.* Men and women of the farming and local communities along with experts and officials will constitute the National Biodiversity Authority and the state and local-level authorities.
- *A national and international campaign for the protection of Indian rights over Basmati rice.* This includes lobbying for national legislation on a geographical indication to protect traditional products like Basmati rice, Darjeeling tea, and fruits like special varieties of mangoes and litchis.
- *Lobbying to keep the ISM out of the purview of patents* by having them excluded from the Patent Amendment Act.
- *Lobbying to make procurement of millet and what are called “coarse grains” part of the government’s procurement policy.* At the time of writing, the government bought only rice and wheat on a procurement basis. The procured grain was used in the public distribution system that provides subsidized food to the poor. It also constitutes part of the buffer stock that India maintains as a hedge against food shortages. Non-wheat and rice grains are far more nutritious and better suited to local diets and food habits. Gene Campaign is lobbying for the inclusion of these cereals, since a guaranteed market would not only reverse the trend of genetic erosion of these cereals and their varieties but also help to conserve them.
- Documenting TK about biological material, especially folk medicine, in four Adivasi populations. These include the Mundas and Oraons (of Bihar), the Bhils (of Madhya Pradesh) and the Tharus (of Uttar Pradesh). The study on the northeastern hill tribes is underway.
- Based on knowledge collected from the communities, Gene Campaign has prepared health manuals for human and veterinary diseases so that communities can benefit from their own skills. This is necessary because of the rapid erosion of TK among the younger generation.
- Re-establishing awareness of and pride in TK. When Gene Campaign started working with Adivasis, they regarded TK as a useless body of knowledge devoid of commercial interest. The awareness programme drew their attention to the current importance of TK, national and international developments, the interest of the international pharmacological industry in herbal products, the issue of biopiracy, and the possibility of earning money from their knowledge and their biological resources. Today, these communities are at least somewhat motivated to conserve medicinal plants and have acquired some sense that what they possess is valuable.

Gene Campaign’s awareness work has increased the income derived from some forest produce. A specific example is *Cassia tora*, a wild plant whose seeds are collected and sold by the Adivasis to local grain merchants, who often double as buyers of forest produce. The price paid for *Cassia tora* was 50 paise per kilogram, or US\$12 (Rs. 500) for 1,000 kilograms. The Adivasis were told that *Cassia* was going to Bombay to be sold for much higher money and that hence they should either demand more money for their produce or not sell the produce. They followed this advice, as the seeds are not perishable and can be stored. Negotiations resulted in a five-fold increase in the agreed price (Rs 2.50 per kg). The awareness that their forest produce is in great demand and can sell for far more than the local price has led these communities to demand higher prices.

The genetic diversity of Indian trees has been documented. The report on forest diversity provides an inventory and theoretical and practical applications. It identifies the commercial and non-commercial uses of Indian tree species. Based on their economic importance, separate lists are provided of genera and species that are sources of timber, food, fodder, medicine, natural dyes, oils, fiber, resins and so forth. These lists also include the names of species that have potential but are not yet commercially exploited. The inventory, which gives the conservation and research status of each species, will be helpful in assessing the range of special characteristics of trees that can be used to generate sustainable income from forest resources.

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## Notes

- <sup>1</sup> Including Drakshasava, Chavana Prash, Trikatu, Black Seed Herb, Capillaris herba, Angelica Root, Wild Dagga, Haritaki, Shatavari, Labdunum, Neroli, Unicorn Root, Papaver Rhoes, Dendrobian, Calea Zacalechichi, Rue, Amla, Salvia Divinorum, Crocus Sativa, Lotus and Gokshura.
- <sup>2</sup> Centres where agricultural products are traded.
- <sup>3</sup> *Choupal* means "meeting place" in Hindi. E-choupal is essentially an electronic meeting-place for sellers of agricultural products.
- <sup>4</sup> For example, such techniques might involve single-copy DNA, interspersed repeats, minisatellites or microsatellites.
- <sup>5</sup> Note especially the Kalamkari paintings of Andhra Pradesh and the Picchwai paintings of Nathdwara.
- <sup>6</sup> This is the kind of knowledge that Gene Campaign has been documenting.
- <sup>7</sup> This idea is taken from the Costa Rican law on TK.

# HARNESSING TRADITIONAL KNOWLEDGE FOR DEVELOPMENT AND TRADE: THE PHILIPPINES EXPERIENCE

Jocelyn L. B. Blanco

## Introduction

The Philippines is home to some 126 ethno-linguistic groups. It has a vast variety of traditional knowledge (TK), which still influences the lives of Filipinos. The TK of the Philippines is mostly concentrated in the areas of health care, agriculture, forestry systems, mining, arts and crafts, music, dance, and literature. Among the best-known embodiments of the country's TK are the world-renowned rice terraces of the Ifugaos. The indigenous knowledge systems and practices work well and are both integral to the efficient management and to the preservation of the ecosystem and to sustainable development.

Awareness of the need to protect TK was spurred by economic development at the end of the twentieth century. Massive logging and large-scale mining in the Philippines were among the main activities that caused the displacement of indigenous people from their ancestral domains, adversely affecting the TK of many indigenous communities.

Provisions were incorporated into the Constitution of the Philippines in 1987 to address the problem of vanishing TK. Specifically, Section 17 of Article XIV provides that

“The State shall recognize, respect and protect the rights of indigenous cultural communities to preserve and develop their cultures, traditions, and institutions. It shall consider these rights in the formulation of national plans and policies”.

Based on this constitutional mandate, the Indigenous Peoples Rights Act (RA) 8371 was passed in October 1997. This law recognizes the rights of indigenous people to their ancestral domains and lands, self-governance and empowerment, justice and human rights, and cultural integrity. It protects the intellectual property rights of the indigenous communities; it also guards their religious and cultural sites and ceremonies, indigenous knowledge, traditional practices, and biological resources.

## Traditional arts and crafts

Indigenous people in the Philippines are deeply involved in their traditional arts and crafts, which are a part of their daily life. These activities and products derived from them can, if promoted, become a valuable source of income. The following examples of arts and crafts used by traditional cultures of the country illustrate their experiences and also focus on areas needing attention.

### **Pottery**

As an economic activity, pottery making in the Philippines dates back to the pre-Spanish era. Traditional processes involve clay soil quarrying using traditional digging tools, transportation via carabao-driven sledges, solar drying of clay, open firing of pottery products, pulverizing of clay with stone and wooden rollers, and use of the potter's wheel for making clay artifacts. Early products range from simple and crudely finished pots, jars, and toys to building materials such as decorative bricks. With competition, innovative processes have been developed that produce high-quality ceramic products. Recently, ceramics has become a major export item.

### **Metalwork**

Early metalwork products range from long bladed weapons to simple heavy cutting tools primarily for personal protection, hunting and household use. The *tabak* and *kampilan* are among the known primitive weapons. The creation of these weapons involves heating steel to a red-



hot state and then hammering it to the desired shape. Later, the surface is rubbed with sandstone and files before finishing with a heat treatment.

### ***Jewellery***

Owing to its abundant supply of gold and the competitive prices its products command, the Philippines produces many traditional jewellery items. The skills required for this have been developed over several generations. Jewellery is primarily made manually. Foremost among hand-crafted jewellery styles is filigree with its intricate designs and delicate craftsmanship.

The small-scale mining sector is a beneficiary of the jewellery industry. Jewelers obtain raw materials from this sector in an informal manner. Small-scale mining provides fair economic returns to those involved, with comparatively little impact on the environment, in respect to the destruction caused by large commercial mining operations.

### ***Handloom weaving***

The handloom weaving industry thrives in the eastern part of southern Luzon, the Bicol region,<sup>1</sup> where the supply of abaca fiber is abundant. Designs differ depending on the ethnic origins of particular localities. Bicol has become known as the “Handicraft Country in the Philippines” because of its ability to produce quality products for local and export markets. These and other traditional crafts absorb much of the employment surplus in the agricultural sector. Non-traditional exports in 1999 amounted to US\$40.161, of which around 86 per cent came from handicrafts.

## **Government support programs**

The government, through the Department of Trade and Industry (DTI), provided the following support programmes geared towards improving competitiveness in the local and export markets, with the resulting economic gains flowing to the local community. These programmes include product and skill development, technology transfer, marketing, financing, project management and institutional development, productivity enhancement, sustainability promotion, and resource regeneration.

### ***Product development assistance***

The Product Development and Design Center of the Philippines<sup>2</sup> regularly conducts design seminars and product development sessions on a regional basis. Indigenous people are assisted in product development through a cost-sharing arrangement with the DTI. In addition, product development activities required for supporting trade exhibitions and trade promotions are normally provided.

Non-governmental organizations (NGOs) such as the Association of Partners for Fair Trade, Inc. (APFTI) are also being used by DTI. This institution offers free product development seminars and consultancy services, to identified fair trade practitioners. It also sponsors deserving clients' participation in trade fairs.

On the local front, DTI is now developing young and local designers to augment the country's pool of indigenous designers. State and private colleges and universities in Bicol are supporting this initiative through their industrial design departments. The initial group included 24 trainees, and a continuous training programme for keeping them abreast of current trends in the field is being considered.

### ***Technology transfer***

Technology transfer is being accomplished through the introduction of new processes and the use of new production machinery and equipment. Benchmarking activities are also being conducted for this purpose.



### ***Skills development programme***

The skills development program aims to generate workers capable of supporting the industries growing in the region.

The DTI strategy for implementing the training programme comprises the following elements:

- Utilizing the agency's regular training funds
- Networking with local government units (LGUs) to access resources from the Development Fund
- Preparing and endorsing training proposals for the Technical Education and Skills Development Authority<sup>3</sup>
- Using special funding sources, such as the DOLE-GATT Fund

### ***Marketing programme***

Various marketing programs are being undertaken by DTI to help entrepreneurs promote their products, establish market linkages, produce products in demand, expand existing markets, and penetrate new markets.

Activities undertaken in the marketing programme include conducting seminars on market trends and opportunities, preparing and publishing directories and product profiles; and establishing contacts with potential buyers. The most tangible marketing activity is the organizing of and participation in trade fairs at the national and international levels, where buyers are invited and sales made.

### ***Financing programme***

The programme provides assistance to entrepreneurs who require additional capital through:

- Bank referrals, including assistance in structuring loans
- Investment matching, creating joint ventures and partnerships
- Direct loan assistance to indigenous communities, the non-bankable sector

Direct loan assistance to indigenous communities is given through NGOs like the NGO-Micro Credit Project (NGO-MCP);<sup>4</sup> loan eligibility requirements for applicant NGOs are established. Management of loan funds from the funding institutions is transferred to DTI, which then channels these funds to NGOs that meet the eligibility requirements for lending to micro enterprises operating in the locality. This project is funded by the Asian Development Bank with an equity stake from the government.<sup>5</sup>

### ***Project management and Institutional development programmes***

A common method of implementing these programs is by conducting training and holding seminars. The latest methodology for holding project management seminars is the Best Game (Business Expense and Saving Target Game) approach, which takes the trainees through an actual business experience in a simulated commercial environment.

### ***Productivity programs***

DTI's current productivity improvement programme includes the following:

- **Industry clustering**, as a productivity strategy, can be further classified according to geography, sectors, and sub-assemblies supporting line and component production.
  - *Clustering by geography* is simply locating various industries in one geographic location. *Sectoral clustering* is concentrating one industry in one area. Craft villages take the sectoral cluster form. Products can be finished goods or assembly components.
  - *Clustering for line production* is achieved through consolidation of producers of assembly parts needed for producing one type of finished product. This is the most practical approach for sub-contracting schemes.
- **Adoption of good housekeeping practices**
- **Establishment of area productivity councils**

Area productivity councils are being initiated primarily to address problems affecting exports at the local level, and as channels for directing emerging issues to concerned agencies if they are not within the council's control or jurisdiction. In addition, the council initiates productivity programs supported by the Export Development Council for its members.

- **Establishment of production and training centres.** The Ceramics Production Center in Tiwi, Albay, is a support facility for the community's traditional artisans. The centre offers equipment and machinery that individual workers cannot afford. It also functions as a training centre and production unit. It is managed by the community and gives a big boost to the production capacity of the people it serves.

Another project, the jewelry training center in Camarines Norte, will address the shortage of jewelers in the region caused by migration and increased demand for the product. The centre will introduce improved processes and techniques as well as the use of new equipment to improve product quality and productivity.

Common service facilities for bamboo and rattan crafts are established in the province of Camarines Sur. In addition to their usual function, the facilities serve to standardize product quality.

### ***Project for immediate implementation***

In collaboration with other agencies dealing with preservation of history and culture, DTI will be embarking on a project to document the rich tradition of the indigenous peoples in the region, particularly their arts and crafts.

Sustainability of projects in the handicrafts sector includes production and regeneration of raw materials for handicrafts, bamboo and rattan crafts, and opening of *minahang bayan* (small-scale mining sites) for the jewelry industry.

### ***Protection of traditional arts and crafts***

The Philippines has established a legal framework for the protection of TK in the country. Its Indigenous Peoples Rights Act recognizes the rights of indigenous peoples. It also recognizes the important role of indigenous peoples in preserving ecological balance and biodiversity. The built-in protection mechanism provided under this law is the requirement for freely given prior informed consent by the indigenous people regarding activities that may affect them.

In compliance with the requirements of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement, the Philippines has an Intellectual Property Code of the Philippines.<sup>6</sup> Patents, trademarks, copyright and other economic rights are covered by this code.

There are, however, other legislative initiatives in congress to protect the intellectual property rights of the community. Key provisions of these initiatives are the establishment of national registers for plant variety, indigenous cultural heritage, indigenous inventions, designs and utility models, arts, crafts, and traditional practices. With these registers, the Philippines can establish rightful claims over extant TK in the country and institute the necessary *sui generis* protection system without establishing a cumbersome, lengthy and expensive patent system.

Traditional arts and crafts need to be protected because they provide the indigenous people and their community with income for subsistence. Government intervention through an innovative sustainable programme seeks to bring economic gains to this segment of Filipino society. As most countries already have distinct brands (identities), protection can be given to specific products from a country through a certificate of origin. The specific identity of a product is based on the materials, designs, and production processes involved. Sustainability of this economic activity through the availability of the required raw material can be ensured by giving the indigenous peoples ownership of the resources, as they then have an incentive for conserving and regenerating the raw material and controlling its availability.

There is, however, some apprehension regarding how the policy-making processes for protecting TK and their implementation modalities will evolve. Almost all programme failures are attributable primarily to the insufficient capacity and capability of the implementers, not-

withstanding their sincerity and the receptiveness and involvement of the beneficiaries. The element of time is also very important as protection, necessary only when there is something there to protect. The policy-making process also needs to cover the following concern: to ensure that the emerging policies are acceptable, involvement of the concerned segment of society at the very beginning of the policy-making process should be a basic requirement.

## Notes

- <sup>1</sup> The region ranks second to the Visayas in terms of fibre production.
- <sup>2</sup> A DTI attached agency.
- <sup>3</sup> A government vocational training institution.
- <sup>4</sup> Formerly known as the Tulong SA Tao – Self Employment and Livelihood Assistance (TST-SELA).
- <sup>5</sup> Other financing programmes based on similar on-lending schemes were the TST Locally Funded scheme (the GAA Fund) and the MEDP –CDF scheme of the Congressmen, which were terminated early because of the Government’s budgetary and political constraints.
- <sup>6</sup> Republic Act No. 829300.



# PROTECTING TRADITIONAL KNOWLEDGE: SYSTEMS AND EXPERIENCES IN SRI LANKA

Vijaya Kumar

## Introduction

Traditional knowledge (TK) in Sri Lanka is mainly in the formalized medicinal systems such as Ayurveda, Siddha, and Unani, which were largely introduced from outside the country. There is very little TK available in non-formalized systems. The island is too small to permit total isolation, and its well-developed social infrastructure providing free access to good health and education has encouraged communities to be closer.

The most important formalized system is Ayurveda, which originated in India and is part of the overall health services provided by the Government. Many of the raw materials used are not grown in Sri Lanka and are regularly imported from India, which is consistent with the Indian origin of the system.

However, over the years the Ayurveda system has diverged somewhat from the Indian Ayurveda system. Some of the plant materials used in Ayurveda drug preparations in India have been replaced by materials from related plants growing in Sri Lanka, some by similar-looking but botanically unrelated material, and still others by botanically completely different material. Remarkably, some of these unrelated and unconnected materials show chemical similarities to the original Indian raw material.

Besides Ayurveda, other formalized systems include the Unani system. Unani medicine is used by the Muslim population of the country, which suggests that Arab traders introduced it to the island. The Siddha Ayurveda system, which is closely related to the main Ayurveda system, is practiced mainly in the Tamil-speaking areas of the country and owes its origin to a modified Ayurveda system developed in Tamil-speaking areas of India.

The Government Department of Ayurveda, Sri Lanka (DASL) has documented the national formalized medicinal system in the three volumes of Part I of the Ayurveda Pharmacopoeia.<sup>1</sup> The Pharmacopoeia identifies the raw materials used by physicians using the indigenous system, drugs that should be prescribed for various diseases, and methods of preparation for different drugs.

Although the Pharmacopoeia claims to deal with all three formalized systems, it concentrates mainly on Ayurveda. Plants used in the local Ayurveda system have been botanically described, and many of these have been investigated for their biological activities by scientists in the universities and research institutes. Three companies make Ayurvedic preparations on an industrial scale.

The non-formalized system in Sri Lanka includes Desiya Chikitsa (National Treatment). The community relies on this system mainly for the treatment of eye diseases, fractures and dislocations, burns and scalds, boils and carbuncles. Some of the practitioners specializing in fractures and dislocations are of such high reputation that they are often the first choice for treatment even by sections of the community accustomed to allopathic (western) medicine. The TK involved has been protected in the form of family secrets transmitted from one generation to another.

Non-formalized TK in agriculture has been largely lost. There are a few sources of food materials, which are generally consumed by small segments of the community, but with the assimilation of these communities, this knowledge has become public and the habitats populated. In the past, traditional seeds were regularly used, but modern crops have replaced them over the years. The Green Revolution saw most farmers moving away from traditional rice to modern hybrid varieties. Some of the germplasm has been preserved locally, but most of it is available in international germplasm depositories. It is unlikely that Sri Lanka's prior consent

will be obtained or that it will share in any benefit if its traditional germplasm available in these depositories is used to develop new commercial seeds.

There are five plants that, according to folklore, have been used to protect plants against disease. These plants have been studied for their pesticidal activity and experimentally found to have weak to moderate plant protection properties. It is possible that they were effective against the old varieties of pests, but they are unable to counter the more resistant varieties found today. Their role in the past could also have been that of a green manure rather than that of a pesticide.

There are a few communities that, although not physically isolated, have been separated from the mainstream for historical and social reasons. The aboriginal people called the Veddahs are a small community consisting of a few families. Many of their more public members are believed to be impostors seeking to profit from tourism and academicians interested in their lifestyle. The Rodiyas are a group that was isolated by social ostracism, but this group too seems to have been progressively assimilated and integrated into the general population. There is a gypsy community whose members speak their own dialect. Each of these groups has its own traditional and undocumented health care treatments. However, free education and health-care facilities have provided a powerful incentive for isolated communities to leave behind their traditional life styles.

## **Intellectual property protection and traditional knowledge**

Much of the TK of Sri Lanka has been lost or is disappearing because of modernization. This brings up the question of whether developing countries should attempt to ensure the preservation of TK by preventing changes in the lifestyles of the holders of TK. Such a strategy would in effect deny them the “benefits” of modernization – improved living standards, social mobility, and so forth. Although one can debate whether modern lifestyles are in fact preferable to traditional lifestyles, there is no justification for preventing the modernization of communities with traditional lifestyles merely to preserve TK. The only way to prevent the loss of TK is by documenting it. While the conventional system of intellectual property protection can discourage the disclosure of TK for documentation, it also appears to militate against its rapid documentation.

Sri Lanka has been a member of the Paris and Berne conventions for some years, and its Intellectual Property Act of 1979 already meets many of Sri Lanka’s TRIPS obligations. Although the intellectual property rights (IPR) legislation of the country is being amended to comply with the TRIPS Agreement, the island currently has no plan to permit the patenting of life forms. An alternative *sui generis* system for plant variety protection as required by TRIPS, although the subject of much discussion, is also still not in place.

Conventional mechanisms for the protection of IPR appear ineffective in protecting TK. The high cost of effective protection by patents is far beyond the means of most holders of this knowledge; also, the limited period of protection does not fully compensate for the disclosure of knowledge jealously guarded for hundreds of years. Furthermore, such protection is legally weak, since the novelty of TK used over several centuries may be legally challenged, and its holders have neither the competence nor the wherewithal to meet these challenges. While trademarks may be useful in protecting expressions of indigenous creativity like handicrafts, they are of no use in protecting TK itself. The same will be true for geographical indicators if and when the international community permits their use for the protection of TK. Copyrighting of TK will be ineffective, as such copyrights would be difficult to enforce.

TK that has not been documented usually survives today as a “family secret” similar to a trade secret. The knowledge is passed down from generation to generation and is closely guarded from those outside the immediate family. However, TK maintained as a family secret has a tendency to leak or gradually move into the public domain, and its leakage cannot be effectively prevented, unlike leakage of trade secrets in the corporate sector.



## Commercial exploration of traditional knowledge

Documented/formalized TK or leaked non-formalized TK often forms the basis of scientific investigations, usually by foreign and local scientists, on Sri Lankan plants. These investigations seek to discover substances with commercial potential for exploitation as drugs or pesticides and are often undertaken in industrial countries using biological resources from developing countries. Agreements on benefit sharing are the exception rather than the rule, and rarely do developing countries share in any benefits from commercial exploitation. A recent example is the Sri Lankan plant *Salacia reticulata*, long reputed and locally exploited for its anti-diabetic properties. This plant and a related Sri Lankan species, *Salacia prinoidea*, have been investigated in Japan and the United States for their activity and hypoglycaemic constituents and have been the subject of several publications and patents by Japanese and American scientists (Yoshikawa et al. 1998a, 1998b, 1998c; Shimodo et al. 1998; Yamahara 1999; Inman and Reed 1997), with no reference to the basic knowledge coming from Sri Lanka. It is therefore unlikely that any commercial exploitation of this discovery will result in the sharing of resulting benefits with Sri Lanka or the holders of the TK involved.

TK exploited for the development of commercial drugs not only does not provide any monetary benefit to the holders of the TK but is also, in the long term, against the interest of traditional medical practitioners and traditional forms of medicine.

Many of the Eastern formalized medicinal systems derived from ancient knowledge use a holistic approach in dealing with disease. Disease is considered to be caused by an imbalance in the human system in one of a number of elements contributing to good health. These systems attempt to redress this imbalance by administering complex mixtures of medicines together with a treatment regime extended over several months so as to enable patients to correct the imbalance and regain their health. Western medicine, on the other hand, uses a reductionist approach; it treats diseases more rapidly by partly addressing the symptoms of the disease and targeting specific metabolic reactions, which are thought to induce these symptoms.

Since many of the drugs used in Eastern medicinal systems do not contain constituents that are strongly active against a particular disease, these activities too are often not recognized by the bioassays used in Western medicine. However, if such a component is discovered and is successfully developed by a pharmaceutical company into a drug, the work will contribute to enriching allopathic medicine by strengthening the range of medicines available to treat the particular disease. While such a discovery would give us a better understanding of the basis of traditional medicine, the overall effect on traditional medicine would be negative.

In this Catch-22 situation, an effective drug developed from a preparation used in traditional medicine and successfully marketed in the East will encourage people who normally rely on traditional medicine to shift to western medicine. It will also lead to erosion of traditional cures and their practices. The economic/monetary benefits will certainly go to western countries. The approach can be described as a "quick fix" aimed at feeling good now without worrying about later long-term effects.

## Access and benefit sharing

Very few developing countries have legislated to meet their obligations to the Convention on Biological Diversity (CBD) and even fewer have set up mechanisms to comply with the convention. In Sri Lanka, several committees have been involved in developing and formulating draft legislation. A procedure for monitoring research involving biological diversity and a code of ethics for scientists working in the field have been proposed. However, the laws have still not been brought before the Parliament.

Owing to lack of proper laws, foreign and local scientists have had free access to local biodiversity and TK. Even where formal agreements have been signed, the contracts are often very weak and provide for little or no benefit sharing. Even if there is negligible benefit sharing, the benefit rarely trickles down to the actual holders of TK.

The mismatch between the distribution of global biodiversity and the availability of technology for its conservation and utilization among countries determines the distribution of benefits from the successful exploitation of TK. Benefits mainly accrue to the developed world, with very little going to the owners and sources of TK in the developing world. If some of the benefits from TK do reach countries like Sri Lanka, they accrue mainly to the urban communities or the elite in villages rather than to the poor rural community or to the actual holders of knowledge.

The only way to ensure the PIC of TK holders and greater benefit sharing in the harnessing and exploitation of TK is through effective CBD legislation, which enables regulated access to the country's biodiversity. Unless such legislation is in place, no developing country can take action against the unethical exploitation of its knowledge and biological resources, even if these resources and TK are recorded in patents.

Since TK is often community-based rather than individual-based, a case can be made for setting up a community trust fund to administer distribution of benefits to the communities involved. However, the experience of developing countries in the distribution of benefits to less powerful sections of society has often been that high overheads drastically reduce the benefit actually reaching the targeted recipients.

### ***Sui generis* systems**

Since conventional IPR regimes are ineffective in protecting TK, new *sui generis* systems must be developed for this purpose. A recent proposal by Drahos (2000), which has been further developed in a report to the European Union Directorate on Trade (CEAS Consultants 2000), contains many elements worthy of consideration in the development of a suitable *sui generis* system. The proposal envisages the establishment of a global biocollecting society similar to a copyright collecting society, which would be a depository of TK. The society would license the use of this knowledge to potential users and monitor its use to ensure that royalties are collected and distributed to the holders of the TK and establish a dispute settlement mechanism.

The differences between TK systems in the different regions are great, and there may be a case for having several regional biocollecting societies rather than a global one. A mechanism to establish global priority for the knowledge deposited may be necessary; this mechanism could be administered by a United Nations body. Similar mechanisms (e.g. the Patent Cooperation Treaty) are available in the conventional IPR systems. Community and country biodiversity registers may be effective vehicles for the national collection of TK for deposit in the regional society.

The licensing of TK to users should be non-exclusive, and royalties should be paid over a longer period, perhaps the period of protection envisaged under the copyright rather than that envisaged under the patent system. The system may involve an upfront payment for access to the knowledge and two levels of royalties – a higher rate during the period of validity of any patents arising from the TK and a lower rate during the period of non-patent commercial exploitation.

Natural substances obtained from traditionally used medicinal preparations, even when active, are rarely suitable for commercial exploitation. The natural substances are often found to decompose slowly in the presence of light and air once they are separated from the complex mixture. Furthermore, natural sources are often unable to provide the large amounts of material required commercially. The product that is finally marketed, although born from an idea emerging from TK, can be similar to or very different from the natural substances present in the medicinal preparation, and it is often a synthetic product capable of being produced industrially. Any *sui generis* system must, therefore, ensure that the holders of TK share benefits even when the marketed product is not identical to that present in the preparations used traditionally, as long as the product is derived from TK. The proportion of the benefit being shared could depend on how closely the marketed product resembles the material traditionally used.

Although most drugs today are successful only if a synthetic analogue can be made and marketed, in rare instances a naturally occurring substance can be successfully marketed. Benefits to the country and the community can then accrue not only from intellectual property

but also through local exploitation of the material, provided the bioresource concerned is used in a sustainable manner. A plant product with a high demand may even lead to the growth and development of an agriculture-based industry, which could indirectly contribute to improving the living standards of the community.

## Conclusions

TK is being rapidly lost throughout the world. This phenomenon is a consequence of the modernization of traditional communities, which should not be prevented. The problem of documenting the TK held by these communities has taken on new urgency. Today's conventional IPR regimes discourage the disclosure of TK and hinder its documentation. There is therefore a need to develop an alternative sui generis system that will meet the needs of TK holders. Such a system will not only ensure the sharing of benefits but also create an environment that encourages the disclosure of TK that would otherwise be lost to the world. The development of such a sui generis system is not an easy task, and it requires the concerted efforts of the world community.

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## Notes

<sup>1</sup> DASL 1976; DASL 1980; DASL 1985.

# BIODIVERSITY AND TRADITIONAL KNOWLEDGE: THE MALAYSIAN EXPERIENCE

A. Latiff and A. H. Zakri

## Introduction

The Convention on Biological Diversity (CBD) is one of the most significant and far-reaching environmental treaties, signed by 180 countries and parties to date. However, in the negotiations North and South have disagreed right from the beginning on a fundamental question: Is biodiversity and associated traditional knowledge a “global common”? The developed countries in general believe it is, while the developing ones, who own this most valuable resource, do not. They wish to have an equitable treatment by receiving fair payment for these resources as well as technology for subsequent use.

In finalising the CBD, Malaysia has taken the stance that equitable sharing of the benefits derived from the biological resources of the developing countries should contribute to increasing the income of the impoverished indigenous rural communities that are the owners of this resource. This position had to be taken because of vigorous bioprospecting by business enterprises of the North, particularly pharmaceutical companies. When a product is derived from the biodiversity of a country, the concomitant economic benefits should be shared. Biodiversity is the backbone of agriculture, animal husbandry, forestry, and aquaculture. Discovery of new varieties of plants is constantly needed in order to improve resistance to pests and reduce the use of pesticides and herbicides. The diversity of biological resources and traditional knowledge are the basis of goods (food, fuel, fibres, and medicine), services (recycling, nitrogen fixation, homeostasis, and watershed), genetic information for use in pure and applied sciences, and psycho-spiritual experiences, such as aesthetics and religion (Meffe and Carroll 1994).

Conservation of biodiversity is linked to TK as it underpins diversity of current indigenous cultures. To ensure that biodiversity and associated cultural and local knowledge is conserved and sustainably utilised, there is need for building complete and correct scientific and socio-economic information to assist policy makers and consumers of products and services derived from biodiversity.

## Biodiversity and traditional knowledge in Malaysia

Malaysia includes many ethnic communities with diverse cultures. National policies being developed incorporate biodiversity issues, as these are part of the requirements of the CBD. A biodiversity country study has commenced. It includes identification of socioeconomic factors affecting conservation and use of biodiversity, and a national policy on biological diversity has been formulated.

An important aspect of the country study is to identify the socio-economic factors affecting conservation and use of biodiversity. These include demands for using forests for infrastructure development, agriculture and securing of financial resources all of which have an impact on rural landscapes. Developing countries are changing land use patterns because of relentless market pressures imposed by globalization.

The national policy on biological diversity undertakes “to conserve Malaysia’s biodiversity and to ensure that its components are utilized in a sustainable manner for the continued progress and socio-economic development of the nation”. This commitment is based on the inherent right to existence of all living forms and is deeply rooted in the religious and cultural values of all Malaysians. It aims to enhance scientific and technological knowledge, improve public education, and preserve social, cultural, and aesthetic values of biodiversity.

Malaysia is an area of mega-biodiversity. Its tropical forests, which cover much of the country, constitute one of the oldest and most biologically diverse ecosystems on earth. There are

286 species of mammals, around 150,000 species of invertebrates (with insects being the largest single group), 1,200 species of butterflies, 12,000 species of moths and over 8,000 species of fish. Much of the TK about the country's flora and fauna is the heritage of the traditional societies and communities dependent on them for their survival (Osman, Puteh and Mohamad, 1995).

In Malaysia the general assumptions regarding biodiversity loss have never been substantiated by any scientific data or concrete evidence. The potential loss is very clear as more and more pristine habitats are transformed and converted to other uses. However, the actual loss is difficult to assess until extinction of a particular species is demonstrated. There is no accurate quantification or account of loss of species, although one is bound to believe that many species are lost before they are described. However, estimates indicate that at the global level, since the year 1600, 724 known species have become extinct.

## Cultural aspects

International, national and local discussions on biodiversity do not frequently focus on aspects influenced by the presence or absence of biodiversity, such as the social and religious dimensions of life enshrined in our TK. Scientists primarily focus on aspects concerning taxonomy, ecology, botany, zoology and genetics. These are key facets of biodiversity that most scientists are at ease with. Following the CBD formulation, scientists and biodiversity negotiators have moved their attention to applied aspects of biodiversity such as biotechnology, bio safety, bioprospecting, biodiversity evaluation, and assessment. However, there are a multitude of cultural and ethical issues inherent to conservation and use of biodiversity that seldom get discussed and that require attention.

Most local and ethnic communities give animals and plant a special place in their cultural and social activities. They have irreplaceable roles in death, birth, marriage and other rituals. In many primitive societies, plants act as homes to various spirits, and destroying these plants represents chasing away spirits that are important in the society's social and cultural beliefs. These aspects must be respected by all those involved in conserving and using these resources.

Biodiversity is a basic concept for the understanding of nature as well as human behaviour (Latiff, 1997). Such understanding may include preservation of sacred groves of trees, constraints on the killing of certain wild animals, or preservation of social practices that may affect the carrying capacity of society. Many plants used by ethnic communities have sacred values. For example, in some places in Sabah, local plants (including *Cordyline fruticosa*) are used by the Dusuns community to demarcate land belonging to different families. Destroying these plants invites sanctions according to the local social norms. Some other plants are used to provide food, for example, the dependence of the Melanau on sago (*Metroxylon sago*) as a source of carbohydrate has long been documented. The Penans are hunters and depend on various wild animals as a source of protein. In Sabah, the Orang Sungai of Bukit Garam are known to use many plants for dealing effectively with physical ailments. Various ethnic communities of Sabah and Sarawak have practiced shifting agriculture for thousands of years and have had intense interactions with prevailing biodiversity for generations. Chin (1985) studied the ways the Kenyah, an ethnic group of Sarawak, treat the plants in their environment as sacred and important for food security.

Issues pertaining to biodiversity should include social and cultural aspects. Attention to the social dimension requires that utilization of biodiversity be carried out with community involvement and with attention to the cultural dimension (Nijar, 1995). Many countries do not have legal instruments or standards that protect indigenous peoples from piracy of their biological resources and of their traditional knowledge. Article 8(j) of the CBD acknowledges the need for this. Nijar (1995) has discussed a conceptual framework of mechanisms for empowering indigenous communities to safeguard their TK and the "rights regime" concept.



## The value of biodiversity: socio-political perspectives

Loss of species and their ecosystems has accelerated considerably in recent decades. Our understanding of the value of ecosystems, species and genes is so deficient that we have sacrificed most of the elements of the biosphere that could have helped our future survival. Until the industrial revolution, the effects of human activity were local or, at worst, regional, rather than global. All the great civilizations of the past cleared land for cultivation, introduced plants and animals from elsewhere, and caused lasting change within a defined area. The consequences of the industrial revolution include population growth, huge growth in food consumption, and saturation of sinks, notably river systems and oceans. Higher standards of living inevitably involve higher consumption of food and production of more waste. Higher consumption of resources in rich countries and heavy pressure in poor ones to increase consumption has already changed the face of the earth. Similarly, at the local level, higher consumption in cities and towns has put pressure on rural areas. Demand by urban areas for more water and energy has put pressure on rural populations. These developments have various social and political implications.

For example, from an ethical perspective, do the largest consumers have the right to exterminate plants, animals, fungi and the like that are used in many traditional societies? The belief that they do is based on the capitalist view of humans as distinct from nature. However, respect for the holistic nature of life has always been a central tenet of Buddhism, Taoism, Christianity, Islam, and other belief systems.

From an aesthetic perspective, rural populations are used to beautiful green landscapes. Certain development activities cause lasting damage to these rural landscapes. Construction of roads and highways across rural areas, building of new settlements and the like alter the landscape and affect the livelihood of traditional communities.

Malaysians have also realized the direct economic importance of biodiversity. The exploitation of various timber species as a source of hard tropical wood is a testimony to our understanding of the economic benefits of exploiting biodiversity. More and more lowland dipterocarps forests are being logged to obtain foreign exchange needed to develop the nation. Such development sidelines traditional communities. The question of sustainability is not addressed, because we erroneously believe that we have plenty of resources. Many people still do not comprehend the concept of sustainable development, let alone the mechanisms for sustaining and renewing natural resources.

As well as conserving biodiversity at the species and ecosystem levels through *in situ* conservation, we need to conserve the genetic diversity that occurs within these levels. The wild relatives of useful strains of economic crops, fruit trees, vegetables, domesticated animals and the like are often lost when natural habitats are converted to other land uses (Osman et al. 1995). Without a large natural genetic reservoir, our food supplies become vulnerable to diseases.

The same issues arise in discussions of the indirect economic benefits provided by the diversity of life. Today there is a tendency to regard every service provided by the environment as cost-free. Forests and vegetation produce soil, hold it together, and regulate water supplies by preserving catchment basins, recharging ground water and buffering extreme conditions. The value of these resources should not be underestimated or forgotten.

## Links between biodiversity, conservation and culture

Today the value of biodiversity has become a major determinant of the international system. Proposals sometimes put forward by the developed countries are based on different perceptions of the development processes by the developing and developed countries. Conservation of culture and biodiversity should become the main determinants of the economic development system. A partnership between the two may help to solve many issues. Contrary to present practice, economic benefits should not be the main consideration in using biodiversity, as the cultural dimension also needs to be considered. Lack of appreciation of cultural prac-

tices of the indigenous communities of the developing countries may lead to losses on both sides of the North–South divide.

### Human influences on biodiversity

Before the industrial revolution, change was slow and steady, and the balance of life is presumed to have been in harmony and equilibrium. Since the industrial revolution, humans have succeeded in accelerating the rate of producing goods for consumption on a massive scale, which has threatened food security and health. The forest is an important ecological resource that has suffered in the pursuit of economic advancement (Mannion and Bolwby 1994). Much deforested land was put to agricultural use, and later, when agriculture became less productive, was converted to industrial or housing uses. Each conversion resulted in loss of biodiversity, especially of vegetation types, plant species and animal populations, few of which are replaceable.

Human activities affecting the sustainability of the biosphere have been discussed by Lubchenko Olson, Brubaker, Carpenter, Holland, Hubbal, Levin, MacMahon, Matson, Mellilo, Mooney, Peterson, Pulliam, Real, Regal and Riser (1991). Some of the activities affecting traditional communities and their knowledge are shown in Table 1

**Table 1: Relationship between human activities and ecological functions**

Activities		
Land clearing Agriculture Forestry Fisheries Water diversion Mineral extraction	<b>Intended results</b>	<b>Improved quality of life</b>
	Food production Shelter Consumer goods Culture	Fibre production Water supply Enjoyment Knowledge
	<b>Unintended results</b>	<b>Environnemental costs</b>
	Habitat destruction Deforestation Acid precipitation Climate change	Soil degradation Pollution Eutrophication Loss of biotic diversity

### Biodiversity and the quality of life

A comparison of biodiversity between countries reveals huge differences. The developed countries have lost much of their biodiversity through industrialization, while the developing countries still have part of their natural endowment. The former now undertake bioprospecting activities in the developing countries, which need the financial resources in order to develop. These differences make it very difficult to preserve biodiversity and the burden created by the developed countries continued pursuit for higher living standards is borne by the developing world. The irony is that the developed countries with their high standard of living expect the poor countries to give first priority to conserving biodiversity, but are not helping them to address the problem of alleviating the grinding poverty faced by their masses. This is ethically indefensible. In the world about 1,500 million people live in a state of absolute poverty, have no potable water or electricity and are illiterate. On the other hand, 20 per cent of the world’s population earns 150 times more than the poorest 20 per cent. Approximately 1,169 million

people earn less than US\$1 a day.<sup>1</sup> How long can the ethics of biodiversity endure the consequences of economic inequity between countries?

## The challenges ahead

It is important to include cultural perspectives on biodiversity issues. Indigenous cultures and their knowledge play a very important role in conserving and protecting the environment, both locally and nationally. One of the major challenges in planning for the development of natural resources is to take into account cultural and ecological aspects when considering economic development. For sustainability, cultural and ecological considerations need to be explicitly considered.

It is time for scientists to play a more positive and active role in the planning and management processes affecting the development and conservation of environment and biodiversity. They must not withdraw from the accompanying bureaucratic processes. The limited understanding of the importance of environmental conservation and biodiversity issues on the part of the present cadre of officials makes it imperative that scientists get involved in the planning and administration of the development processes. There is strong need for partnerships between scientists and policy makers in working towards sustainable development, especially on issues affecting traditional societies.<sup>2</sup>

Awareness of the relationship between a healthy environment and the well being of all communities needs to be enhanced. This challenge can be met by increasing effective communication among all parties concerned with the environment. For example, in forest management, many stakeholders from many sectors are involved in decision-making and play a critical role. They all contribute to development, agriculture, industry, and health care, all of which impinge on sustaining forests, which therefore, can no longer be the sole responsibility of the forest department.

## Relevant policies and legislation in Malaysia

### *National policy on biodiversity*

The National Policy on Biodiversity was prepared by an ad hoc task force initiated by the National Technical Committee on Plant Genetic Resources based on the resolution of the National Workshop on Biodiversity held at the Institute of Strategic and International Studies in February 1993. The draft document was prepared for circulation to the respective federal government ministries and agencies, state governments and other authorities by August 1994. It covers three important areas: policy, strategy, and action plans.

The policy section consists of a national vision, a policy statement, principles, objectives and the underlying rationale. Simply put, the vision is “to transform Malaysia into a world centre of excellence in conservation, research and utilization of tropical biodiversity by the year 2020”. The policy seeks “to conserve Malaysia’s biodiversity and to ensure that its components are utilized in a sustainable manner for the continued progress and socio-economic development of the nation.” The policy recognizes a total of 11 guiding principles for biodiversity conservation and sustainable use. The objectives centre around the economic benefits that can be derived from biodiversity, such as food security; environment integrity and stability; the concept of national biological heritage; scientific, educational and recreational values; bio safety; biotechnology; and sustainable development guidelines.

The strategy section covers the status of biodiversity conservation and strategies for effective management of biodiversity. It includes an overview of both *in situ* and *ex situ* conservation, sectoral policies, the current legislative framework and international cooperation and linkages. A total of 14 strategies for effective management of biodiversity are outlined.

The action plan consists of a set of programmes that should be undertaken by various implementers. Altogether, a total of 86 programmes were identified and proposed. The plan of action follows the strategies closely.

### ***Other related policies and legislation***

While Malaysia has numerous laws and regulations to protect its environment, there is no single legislation relating to biodiversity conservation and management. Much of the present legislation is sector-based. For instance, the Fishery Act of 1985 deals only with the conservation and management of fisheries; the Protection of Wild Life Act of 1972 deals with the protection of wildlife; and the National Forestry Act of 1984 deals with the management and utilization of forests. The mechanisms for strict implementation and enforcement of existing laws are vital for achieving the required conservation objectives. To make the legal framework effective, not only should government agencies adhere to it, but the public should also participate in their enforcement and demand accountability from the government. In this context the communities, in particular the indigenous ones that are directly associated with the protected areas and TK, should become aware that they are the rightful owners and custodians of their TK and biodiversity.

### ***Legal aspects and governance***

Malaysia is a federal state. The constitution provides for the division of power between the federal and state governments. Each government has its own legislative and administrative body to exert control over their respective spheres of jurisdiction and is independent from the others, as specified in the constitution. The distribution of power can be divided into the federal, state, and concurrent lists. With regard to matters concerning the environment and biodiversity in particular, the respective lists give the respective government's clear authority to enact laws. In the concurrent list there is a certain degree of overlap in authority; hence laws can be made at both levels of government. To resolve any potential conflict arising from the overlapping authority, Article 75 of the Constitution provides that, if any state law is inconsistent with a federal law, the latter shall prevail and the state law shall, to the extent of inconsistency, be void.

The most distinct feature of the legislative framework relating to biodiversity is that, under the Federal Constitution, the authority to legislate for matters relevant to biodiversity does not fall under one single authority<sup>3</sup>. Most responsibilities relating to biodiversity conservation are shared between the federal and state authorities; some others fall under the responsibility of one authority alone, be it the federal or state authority. Parks fall under the legislative authority of both the federal and state governments. Some other areas (e.g. forests and agriculture) only fall under the legislative authority of the states of the Malayan Federation.

### ***National land code***

Land laws and administration are based on the National Land Code. However, the states of Melaka, Pulau Pinang, Sabah and Sarawak are governed by their own land enactments. Legally and administratively, land is a state matter and thus under the jurisdiction of the relevant state government. Therefore, a federal policy on land does not apply to the state, though the federal government can exert certain influence. Land laws have no direct bearing on biodiversity, but indirectly they provide certainty of tenure in terms of ownership rights. Security of tenure encourages land to be used rather than left idle. The absence of a single central authority on land use means that the maintenance of reserves such as 'Virgin Jungle Reserves' for enhancing biodiversity is left to individual states. Normally the director of the Department of Land and Mines has the right to issue directives and regulations for coordinating land administration. Likewise, the director of the Departments of Forestry and Agriculture directs and regulates the administration of forests and agriculture. Lack of trained professionals for ensuring the conservation and sustainable use of biodiversity of forest ecosystems is a major hindrance in protecting biodiversity and associated local knowledge. The situation is further compounded by the incapacity of the respective state departments to comprehend the various dimensions of Malaysia's rich biodiversity.

### **Sarawak state initiatives**

Of Malaysia's states, Sarawak has the richest and most diverse natural resources, as well as the largest number of ethnic communities with traditional cultures (Mamit, 1997). After the discovery of bioactive chemical compounds (calanolides) in local plants by the National Cancer Institute (NCI) of the United States, and bearing in mind equity based on intellectual property rights, the state formulated and later passed the Sarawak Biodiversity Centre Ordinance of 1977 and the Sarawak Biodiversity (Access, Collection and Research) Regulations of 1998. In this particular case, only a collection permit from the Prime Minister's Department was required for the NCI scientists to go to Sarawak and collect plant materials for screening. After the discovery of the bioactive compounds, the NCI and the Sarawak state government signed a letter of collection permitting subsequent collections. In light of the widespread awareness among indigenous communities and scientists, the Sarawak Biodiversity Council was established in February 1998. It is responsible for regulating access to and collection of the state's biological resources for study, research, protection, and utilization, including export. To implement these provisions, the Council set up the Sarawak Biodiversity Centre in July 1998 (Chua, 2000).

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## Notes

- <sup>1</sup> <http://www.developmentgoals.org/Poverty.htm#percapita>
- <sup>2</sup> See Dassmann et al., 1974
- <sup>3</sup> See Nijar GS, 1995



# DEVELOPMENT OF AN INTEGRATED TRADITIONAL AND SCIENTIFIC KNOWLEDGE BASE: A MECHANISM FOR ACCESSING AND DOCUMENTING TRADITIONAL KNOWLEDGE FOR BENEFIT SHARING, SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT AND POVERTY ALLEVIATION<sup>1</sup>

Ataur Rahman

## Introduction

Various concepts, approaches and methodologies are useful for harnessing traditional knowledge (TK). TK and scientific knowledge differ substantially from each other. In addition to comparing the two approaches, the following discussion emphasizes sustainable development by focusing on the priorities of local people and their TK. It suggests creating a technological base that includes both traditional and scientific approaches to problem solving (IUCN, UNEP and WWF 1991; Johnson 1992; Labatut and Akhtar 1992) and thereby alleviates poverty (Icamina 1993). The discussion identifies the benefits of integrating traditional and scientific knowledge bases and discusses a participatory computer-based decision support system (DSS) for ensuring access, benefit sharing and documentation of TK for sustainable socio-economic development and poverty alleviation in developing countries.

## Human knowledge systems: scientific versus traditional

The study of human knowledge (HK) has been a central subject of philosophy and epistemology since Greek times. Knowledge has also begun to gain new attention as a management resource and power source (Toffler 1990; Drucker 1993). HK systems can be classified into the formal scientific knowledge (SK) system and the informal TK system. The main difference between these two kinds of knowledge systems is in format. The SK system is essentially in an *explicit* format: it can be articulated in a formal language including grammatical statements, mathematical expressions, specifications, manuals and the like. It can, therefore, be transmitted between individuals formally and easily and has been the dominant mode of knowledge accumulation and transfer in (western) scientific philosophy. The format of the TK system is mostly *tacit* – that is, hard to articulate in a formal language. It is embedded in the experiences of indigenous or local peoples and involves intangible factors such as beliefs, perspectives, and value systems.

## Traditional knowledge systems: definitions

Many definitions have been proposed for TK systems, but all of them are incomplete, because the concept is relatively new and still evolving (Johnson 1992; Wavey 1993; Berkes 1993; McCorkle 1994; Quiroz 1996; Berkes and Henley 1997). Literature in related fields uses various terms interchangeably to designate the concept – for example, “traditional ecological knowledge”, “traditional ecological knowledge and management systems”, “local knowledge”, “indigenous knowledge”, “community knowledge”, “rural peoples knowledge” and “farmers’ knowledge”. While certain distinctions can be made, these terms often refer to the same thing.<sup>2</sup> To summarize various definitions, the term *traditional knowledge* can be understood as denoting mainly tacit knowledge that has evolved within a local community and has been passed on from one generation to another; it encompasses not only local or indigenous knowledge but also scientific and other knowledge gained from outsiders.

Nowadays TK systems are seen as pivotal in discussions of sustainable socio-economic development and poverty alleviation in developing countries (Brokensha et al. 1980; Compton 1989; Niamir 1990; Warren 1990; Gupta 1992). In both the North and the South, TK is increasingly being regarded as a precious resource (Warren 1991; Buttimer et al. 1991). The focus on TK clearly heralds a shift away from a preoccupation with the centralized, technically oriented

solutions of past decades, which failed to improve the lot of most peasants and small farmers in the world (Agrawal 1996). There is abundant evidence of human activities that utilize complex but implicit scientific principles.<sup>3</sup> The exclusion of TK from development activities has had disastrous consequences in every region of the world where external knowledge has been imposed without regard to TK (Cashman 1989; Lansing and Kremer 1995).

TK needs to be formalized, as it is essentially of a fragmentary and provisional nature (Arce and Long 1992), and it is in this formalization attempt that problems with respect to its application are most likely to arise. The results of application of this type of knowledge are still not as well known, as are the coded and circulated objective language-based products of scientific discourse.

The collection of TK from diverse indigenous sources is often a laborious, time-consuming and costly process. Proper storage and management must be undertaken if TK is to be made available and accessible for quick analysis and use by all those who need it, including planners and decision makers.

### Comparisons of TK with SK systems

A distinction between the traditional and scientific knowledge systems can be made on the following grounds: *substantive* (because of differences in the subject matter and characteristics of traditional and scientific knowledge); *methodological and epistemological* (because the two forms of knowledge use different methods to investigate reality); and *contextual* (because TK is more deeply rooted in its environment) (Agrawal 1995).

SK is explicit or “codified” knowledge that is transmittable in formal, systematic language. TK, on the other hand, is the tacit knowledge of local or indigenous people, which is personal, context-specific, and therefore hard to formalize and communicate. Local or indigenous people acquire knowledge by actively creating and organizing their own experiences. The TK that can be expressed in words and numbers represents only the “tip of the iceberg” of the entire body of knowledge possessed by indigenous people.

The cognitive elements of TK center on what Johnson-Laird (1983) calls “mental models”, working models of the world that human beings create by making and manipulating analogies in their minds. Mental models such as schemata, paradigms, perspectives, beliefs and viewpoints help individuals to perceive and define their world. The technical element of TK, on the other hand, includes concrete know-how, crafts, and skills. It is important to note here that the cognitive elements of TK refer to an individual’s images of reality and visions for the future – “what is” and “what ought to be”. Some distinctions between TK and SK are shown in Table 1.

Some, however, argue that both TK and SK are attempts to characterize and understand the “universe” of a given society, and that at any given point in time such knowledge represents a “best estimate”, which will be modified when further evidence is obtained. They have pointed out that both knowledge systems are constantly evolving, and that both systems have been developed for their own “universe” and thus are characterized by areas of greater and lesser expertise.

**Table 1. Some distinctions between traditional and scientific knowledge systems**

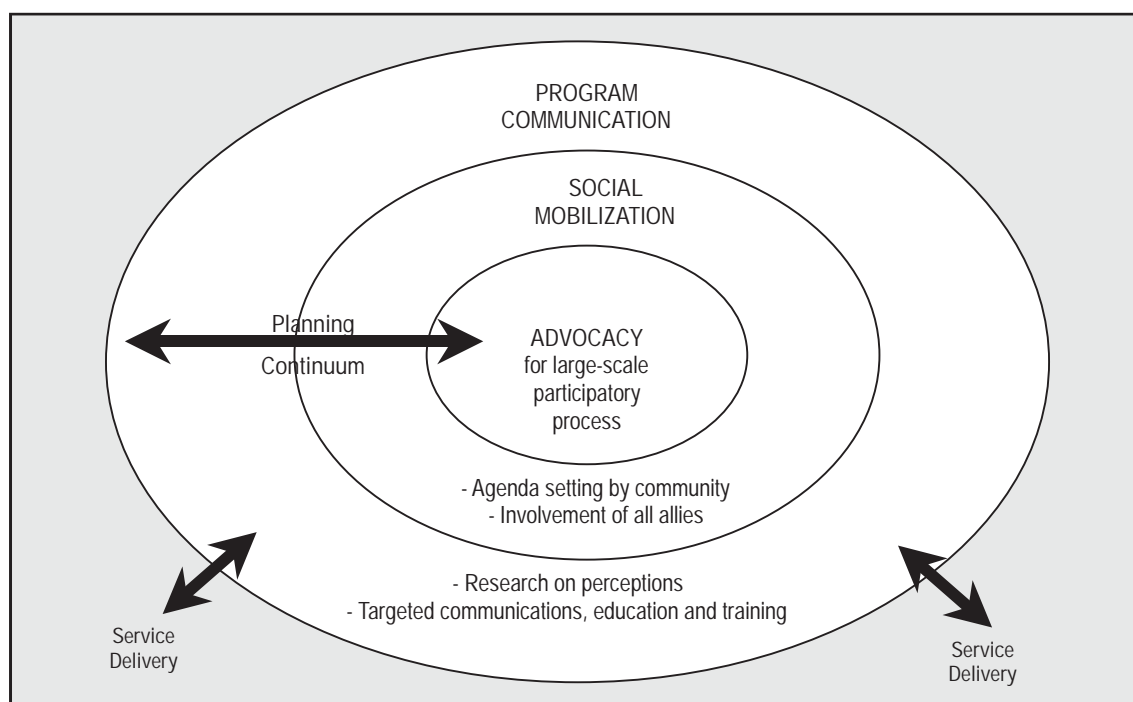
Traditional knowledge	Scientific knowledge
Tacit knowledge (subjective)	Explicit knowledge (objective)
Knowledge of experience (body)	Knowledge of rationality (mind)
Simultaneous knowledge (here and now)	Sequential knowledge (there and then)
Analog knowledge (practice)	Digital knowledge (theory)

## Integration of TK systems with SK systems: rationale and constraints

Given the complexity and different social perceptions surrounding resource management issues, one challenge facing science is to develop understanding, knowledge, forums and learning environments to support better informed and more sustainable decision making. Although science is continuously adding to our knowledge through research, the complexity of the resource systems (Stevenson 1997; Berkes and Henley 1997) makes it impossible for scientists alone to develop the required comprehensive knowledge base (Hall 1997; Meredith 1997). Sustainable development can only be achieved by developing a science based on the priorities of local people, and by creating a technological base that includes both traditional and modern approaches to problem solving (IUCN, UNEP and WWF 1991; Johnson 1992; Labatut and Akhtar 1992). Sustainable development might be better served by a system that incorporates both traditional and scientific knowledge systems (Icamina 1993).

However, although it is increasingly recognized and expected that traditional perceptions of sustainable development should play an important role in planning and implementing socio-economic development programmes (Mitchell 1997), this expectation is yet to be fulfilled (Reed 1990; Neis 1992). This is mostly attributable to the failure to develop an adequate mechanism for integrating TK with formal (scientific) decision-making practices (Fenge and Rees 1987).

**Figure 1. Conceptual framework for shared dialogue and partnership building among local community, scientists, resource managers and policy makers by advocacy, social mobilization and program communication**

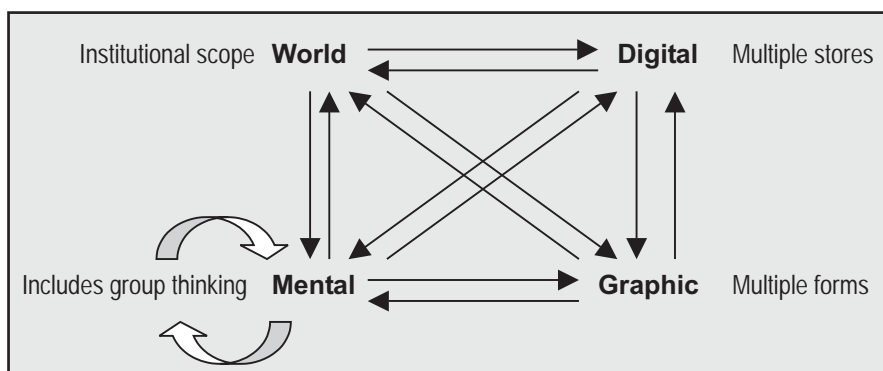


## A potential mechanism for integrating TK with SK

Relevant theories, concepts, methods and empirical understandings are reviewed in a paper<sup>4</sup> on how to develop an effective framework for incorporating local knowledge systems into formal or scientific processes and procedures for resource management in developing countries. It suggests that such a framework should be able to:

- Generate an adaptive, participatory and iterative decision-making process.<sup>5</sup>
- Establish an equitable relationship between TK and SK systems through an ongoing process of dialogue and partnership building among the stakeholders<sup>6</sup> (local communities, scientists, managers and policy makers).
- Allow a variety of participatory research methods for collection of TK.<sup>7</sup>
- Allow cognitive transformation of both the TK and SK among the stakeholders.<sup>8</sup>

**Figure 2. Conceptual framework World-Digital-Graphic-Mental (WDGM) for cognitive transformation of knowledge**



- Be supported by an automated part comprising a comprehensive geographic information system (GIS) and hypertext conversion facilities for processing, organizing and presenting the integrated knowledge base.<sup>9</sup>

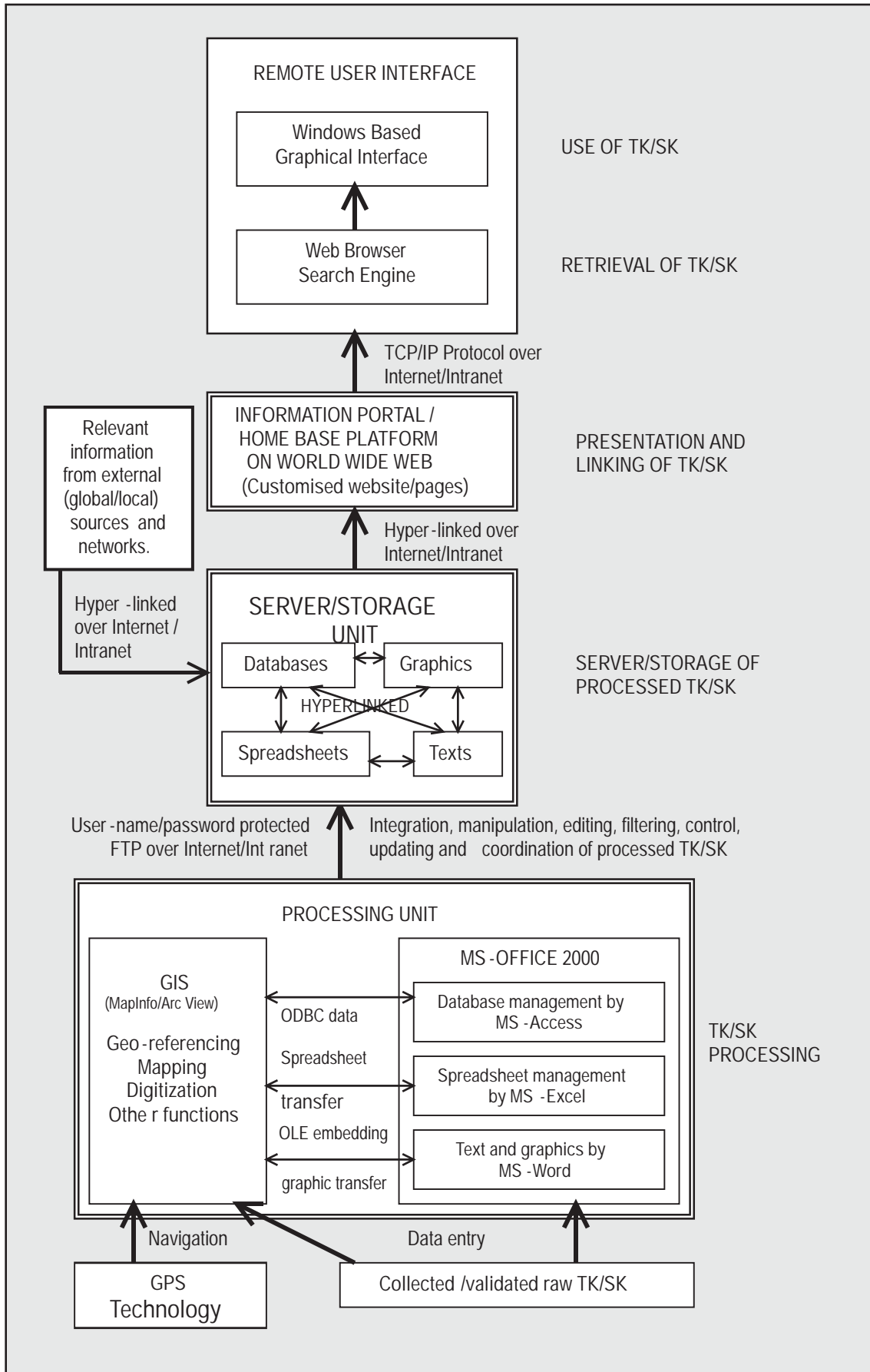
Based on the above conclusions, a case study was conducted in the Lao People’s Democratic Republic to develop a comprehensive framework and mechanism for establishing an integrated traditional and scientific knowledge base. Based on the above criteria, it sought to address priority issues of sustainable socio-economic development and poverty alleviation in the context of a developing country. In this case study,

- Advocacy,<sup>10</sup> social mobilization<sup>11</sup> and programme communication<sup>12</sup> approaches (illustrated in Figure 1) were applied and found useful for shared dialogues and partnership building for obtaining the support of political leadership and ensuring the participation of local communities in the program.

**Table 2. Stages and steps of cognitive transformations in a process of incorporation of local and scientific knowledge**

Transformations*	Stages and Steps
	<b>Stage I: Defining questions, issues and problems</b>
MWMM	Step 1: Identifying and clarifying relevant questions and issues
MWD	Step 2: Gathering and organizing data
	<b>Stage II: Processing the data</b>
MDG	Step 3: Interpreting data
GM	Step 4: Analysing data
MDMM	Step 5: Evaluating evidence
	<b>Stage III: Formulating and applying generalizations</b>
MDGM	Step 6: Generalizing
MWM	Step 7: Drawing conclusions
MMW	Step 8: Making value judgments (recommended policy/programme)
	<b>Stage IV: Re-evaluating</b>
MM	Step 9: Re-evaluating the investigation process
*Transformations among domains of the WDGM Framework. Domains as presented in Figure 2 are: W = World; D = Digital; G = Graphic; M = Mental.	

**Figure 3. Integrated TK-SK knowledge base and information system delivery of the DSS**



- A combination of participatory research methods, including participant observer,<sup>13</sup> rapid rural appraisal<sup>14</sup> and participatory rural appraisal,<sup>15</sup> were applied and found useful for collecting TK from the local communities.
- A world-digital-graphic-mental framework<sup>16</sup> (see Figure 2 and Table 2) was applied and found useful for cognitive transformation and refinement of TK (from tacit to explicit) and SK to incorporate them into an integrated traditional and scientific knowledge base.
- A customized information portal or home base platform for the above integrated knowledge base has been developed on the World Wide Web for easy TK documentation, access, and benefit-sharing (see Figure 3).

The case study revealed that representatives of the local and indigenous communities possessed a tremendous amount of TK regarding the local and indigenous natural resources and environment.

It was realized, however, that this TK was primarily in “tacit” format – something not easily visible and expressible. This knowledge is highly personal and hard to formalize, making it difficult to communicate or to share with others. Subjective insights and intuitions comprise the major portion of this TK. It is deeply rooted in local or indigenous people’s actions and experiences, as well as in their ideals, values and emotions. Thus, the amount of (traditional) knowledge expressed by local or indigenous people in words and numbers represents only a small part of their knowledge.

The TK identified and collected during the above case study has two dimensions. The *technical dimension* encompasses the kinds of informal and hard-to-pin-down skills captured in the term “know-how”. For example, an experienced local or indigenous fisherman develops a wealth of expertise on local or indigenous fish and fisheries after years of experience, and also based on the experience of earlier generations. Yet this person is often unable to articulate the scientific and technical principles behind this knowledge. The *cognitive dimension* consists of schemata, mental models, beliefs and perceptions so ingrained that one must take them for granted. This dimension of TK reflects local or indigenous people’s image of reality (“what is”) and vision for the future (“what ought to be”). Though they cannot be articulated very easily, these implicit models shape the way the local or indigenous people perceive the world around them.

## Conclusions and recommendations

In order to develop a proper understanding of TK systems so as to use them for sustainable socio-economic development and poverty alleviation, the scientific community may need to “unlearn” its conventional view of knowledge.

It may be necessary to go beyond the assumption that knowledge can be acquired only through books, lectures and manuals. More attention may need to be paid to the less formal and systematic side of TK, with more focus on the highly subjective insights, intuitions and hunches that have been gained by the local or indigenous people through the use of metaphors, pictures or experience. For a better understanding of relevant traditional knowledge we should, therefore, see, feel and sense, rather than hear, read and calculate.

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## Notes

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- <sup>2</sup> See e.g. Howes and Chambers 1979; Reijntjes et al. 1992; Warren 1992a; Mathias 1994; Roach 1994; Agrawal 1995; and Lawas and Luning 1997.
- <sup>3</sup> See e.g. Atte 1992; Warren 1992b; McCorkle 1994; and Lansing and Kremer 1995.
- <sup>4</sup> This paper, "A Participatory DSS to Incorporate Local Knowledge for Resources and Environmental Management in Developing Countries", is available at [http://www.fes.uwaterloo.ca/u/marahman/PhD\\_Comprehensive.html](http://www.fes.uwaterloo.ca/u/marahman/PhD_Comprehensive.html).
- <sup>5</sup> UNICEF 1991; Jonsson et al. 1992; CCME 1993; Fussell 1995; Greyer 1994; Pearson 1995; Rahman 1996; Allen and Bosch 1996; Meredith 1997; Hall 1997.
- <sup>6</sup> McKee 1992; Rahman 1996, 1997; Allen et al. 1995; Fedra 1995; Hall 1997.
- <sup>7</sup> Freire 1970, 1974; Fals-Borda 1979; Hall 1981; Tandon 1981; Maundu 1996.
- <sup>8</sup> Moellering 1984; van der Schans 1990; Medyckyj-Scott and Blades 1990; Dewan and Choudhary 1991; Freundsuh and Gould 1991; Mark 1993; Nyerges 1993; Kersten and Noronha 1996.
- <sup>9</sup> Aronoff 1989; Marble 1990; Plant and Stone 1991; Bonham-Carter 1995; Fedra 1995; Huxhold and Levinsohn 1995; Kersten and Michalowski 1996; Hall 1997.
- <sup>10</sup> *Advocacy* consists of the organization of information into arguments to be communicated through various interpersonal and media channels with a view to gaining political and social leaderships' acceptance and preparing a society for a particular development program (McKee 1992).

- <sup>11</sup> *Social mobilization* is a process of bringing together all feasible and practical intersectoral social allies to raise people's awareness of and demand for a particular development program, to assist in the delivery of resources and services and to strengthen community participation (McKee 1992).
- <sup>12</sup> *Program communication* is a process of identifying, segmenting and targeting specific groups or communities with particular strategies, messages or training programmes through various mass media and interpersonal channels, traditional and non-traditional (McKee 1992).
- <sup>13</sup> The "participant observer" attempts immersion, to the extent permitted, in local life in order to understand and document how things work in a community (Freire 1970, 1974; Grandstaff et al. 1987; Chambers 1992; CASL 1995; Yoon 1996; MWLR 1997).
- <sup>14</sup> *RRA (rapid rural appraisal)* may be considered a listening research method and a creative combination of iterative methods and verification, including triangulation of data from different sources. Its techniques include (1) review of secondary sources, including aerial photos, even brief aerial observation; (2) direct observation, foot transects, familiarization and participation in activities; (3) interviews with key informants, group interviews and workshops; (4) mapping and diagramming; (5) biographies, local histories and case studies; (6) ranking and scoring; (7) time lines; (8) short, simple questionnaires towards the end of the process; and (9) rapid report writing in the field (Grandstaff et al. 1987; Chambers 1992; CASL 1995; Yoon 1996; MWLR 1997).
- <sup>15</sup> *PRA (participatory rural appraisal)* is distinguished at its best by the use of local graphic representations created by the community that legitimize local knowledge and promote empowerment. PRA "proper" builds on RRA but goes much further. To RRA it adds some more radical activist perspectives. Its five central additional concepts are the following (1) *Empowerment*: Knowledge is power. PRA generates or reinforces new local confidence regarding the validity of their knowledge. (2) *Respect*: The PRA process develops researchers' respect for local intellectual and analytical capabilities. (3) *Localization*: PRA encourages extensive and creative use of local materials and representations. (4) *Enjoyment*: The emphasis is no longer on speed but on the process. (5) *Inclusiveness*: Enhanced sensitivity, through attention to process; inclusion of marginal and vulnerable groups (Freire 1970, 1974; Grandstaff et al. 1987; Chambers 1992; CASL 1995; Yoon 1996; MWLR 1997).
- <sup>16</sup> Based on an idea of Moellering (1984), van der Schans (1990) has proposed structuring the interaction process in terms of cognitive transformations among four domains in a world-digital-graphic-mental (WDGM) framework to facilitate decision making (for problem solving) in a decision support system (DSS) environment. Nyerges (1993) has adapted this framework to frame the process of various knowledge and information incorporation and use in a DSS (see Figure 2). The arrows in Figure 2 indicate transformation processes between the world (everyday, indigenous-scientific observation), the digital database domain, the graphics display domain, and the mental domain. Most importantly, the mental domain has an arrow onto itself to indicate that rethinking of a transformation can take place, either through reflective thinking (iteration and/or reflection-in-action) or group discussions. The world and mental domains in the WDGM framework are oriented towards the problem perspective, and the digital and graphic domains are oriented towards the tool perspective.





# UNCTAD'S BIOTRADE INITIATIVE: SOME CONSIDERATIONS ON ACCESS, BENEFITS SHARING AND TRADITIONAL KNOWLEDGE<sup>1</sup>

Anida Yupari, Lorena Jaramillo, Rik Kutsch Lojenga,  
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## Introduction

New investment and trade opportunities are arising for biodiversity-based products and services due to the emerging biotechnology industry, the increased search by industry for recyclable products, and the renewed interest of consumers from developed countries in 'natural products'. Biodiversity products and services include, for example, genetic resources, non-timber forest products (NTFPs), ecotourism, and carbon-sequestration. NTFPs are products such as natural dyes, oils and medicinal plants. Genetic resources are used primarily as the source of new economically valuable chemical compounds, genes or germplasm by industry. Relevant industry sectors include: pharmaceuticals, botanical medicines, major crops, horticulture, crop protection products, applications of biotechnology in fields other than health care and agriculture, and cosmetic and personal care products. Annual global markets for the products derived from genetic resources are estimated at between US\$ 500 billion and US\$ 800 billion (ten Kate and Laird, 1999). The UNCTAD Partners for Development Summit in Lyon in 1998 estimated, in conservative terms, that the market for extracts and essences taken from tropical biological matter varies between US\$ 30 million and US\$ 60 million annually (UNCTAD, 1998).

International trade in genetic resources today involves high economic stakes. Traditional knowledge (TK) of local and indigenous communities can play an important role in identifying genetic resources and biodiversity products and services that have a commercial use. Without this knowledge, many valuable medical products used extensively today would not exist. To reduce research costs, pharmaceutical, biotechnology and personal care companies sometimes focus their research on plants and animals used by indigenous people for their beneficial qualities (WIPO, 1999).

The Convention on Biological Diversity (CBD) was adopted in 1992, and its objectives include the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources. The CBD introduced the notion of intellectual property rights (IPR) as a strategy for conserving biodiversity by granting countries sovereign rights over their resources. It also acknowledged for the first time the value of indigenous knowledge in this legally binding instrument.

If trade and investment in biodiversity products and services are to be sustainable and meet the objectives of the CBD, countries need to meet a number of conditions in such areas as legal and policy frameworks oriented towards the sustainable use of biodiversity, technical and entrepreneurial capabilities, the availability of market information and market access, and biodiversity conservation schemes. Adequate and coherent policies, legislation and strategies for access and benefit-sharing arising from the use of genetic resources (ABS), IPR, TK, innovations and practices of local and indigenous communities are essential for sustainable trade and investment in biodiversity products. These will help create a stable trading and investment climate, while ensuring sustainability and benefit sharing, balancing the rights of both the users and providers of genetic resources.

The Biotrade Initiative (BI) stimulates trade and investment in biological resources by enhancing the capability of developing countries to produce value-added biodiversity products and services for both domestic and international markets.<sup>2</sup> Country programmes are at the centre of the Initiative. They identify opportunities and constraints for the sustainable development of biodiversity resources in each country, focusing on biobusiness development, biopartnerships and incentives for conservation, sustainable use and benefitsharing.<sup>3</sup>

The BI, while supporting these programmes, addresses the above issues at various levels. Together with the International Centre for Trade and Sustainable Development (ICTSD), and as a component of the larger mandate of UNCTAD's Trade, Environment and Development Branch, it develops mechanisms to identify international processes and negotiations relevant to trade and biodiversity that affect the development of the country programmes.<sup>4</sup> At the regional level, UNCTAD cooperates with the Andean Community (CAN), the Andean Development Corporation (CAF), the Amazonian Parliament and the Amazonian Cooperation Treaty in integrating concepts related to trade in biodiversity within a regional legal and policy framework. It has also signed memoranda of understanding with the CBD, CITES and the Ramsar Convention to promote the sustainable use of biological resources. At the national level, the Biotrade country programmes work to create a favorable environment for trade in biodiversity products and services. The programmes also provide support to projects in facilitating biobusiness activities.

This paper draws on information gathered during the process mentioned in the previous paragraphs, but does not include information on international processes, since these are dealt with in the background paper of the UNCTAD secretariat (UNCTAD, 2000). As these issues are new and evolving rapidly, Biotrade, in partnership with private and public institutions, continues working toward a better understanding of the scope and implications of trade and investment issues in biodiversity products and services.

The document is divided into three sections. The first section provides an overview of some of the issues that countries may consider when developing an integrated strategy for trade and investment in biodiversity products and services. This section is based on the work being carried out in support of the Biotrade country programmes. The second section provides an overview of the Andean process, particularly Decision 391 of CAN on a Common Regime on Access to Genetic Resources. This section is based on a paper detailing the projects that Biotrade is developing to support the implementation of the Andean biodiversity strategy, a process coordinated by CAN and for which Biotrade programmes supported the formulation process. The third section provides a brief overview of the situation in Colombia and Peru on access and benefit sharing with TK holders. Biotrade country programmes are being implemented in both Colombia and Peru.

Finally, this paper integrates the issues of TK, access to genetic resources and benefit sharing. The Conference of Parties of the CBD noted that, given the connections between genetic resources and indigenous knowledge, innovations and practices, countries may consider implementing Article 8 (j)<sup>5</sup> on TK in conjunction with Article 15, which contains the broad framework for access to genetic resources.

## **Towards an integrated strategy on trade and biodiversity**

This section focuses on UNCTAD's work in creating a strategy that integrates trade and biodiversity in support of Biotrade country programmes, particularly those in Colombia, Ecuador and Peru. In this paper, there is an emphasis on the issues of access to genetic resources and the rights of TK holders.<sup>6</sup>

In ratifying the CBD, countries make a commitment to the conservation of their biological diversity, the sustainable use of its components, and fair and equitable sharing of the benefits arising from the use of genetic resources. To this end, they design a series of policies and regulations, such as national biodiversity strategies (NBS) and laws on access to genetic resources and TK.

The economic, trade, social and environmental policies, strategies and laws of many countries are often conceived separately. As a consequence, they often run parallel and even work counterproductively in relation to each other, hampering their effective implementation. Moreover, the separate functions of different ministries and agencies can sometimes lead to a lack of coherent policy and make integration difficult. The Ministry of Trade will deal with commerce and trade issues, while the Patent Office will be concerned with intellectual property rights, the Plant Variety Office, usually located in the Ministry of Agriculture, will deal with seeds, while a separate ministry or agency will deal with the environment. Policy integration is therefore a

precondition to create a constructive framework for economic growth while attending to social and ecological needs. It is also necessary to bring national legislation in line with international commitments. For example, in the area of trade and biodiversity, cross-sectoral policy integration is required to successfully implement the CBD's provision on access and benefit sharing arising from the use of genetic resources and associated TK, and the provisions of the TRIPS Agreement.<sup>7</sup>

Policy integration and coherence ensure a balanced decision-making process, taking into account the wider impact on parallel ministries and the sectors they are responsible for. This integration should also lead to more effective participation in international negotiations and more informed trade-offs (Tansey, 1999). Such integration would ensure the creation of an environment that allows the private sector to take advantage of and capture investment opportunities in biodiversity resources, assuring a clear sustainable development approach.

### **National biodiversity strategies**

In accordance with Article 6 of the CBD, each country shall, in accordance with its particular conditions and capabilities:

- Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, *inter alia*, the measures set out in the Convention relevant to the Contracting Party concerned; and
- Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

National biodiversity strategies (NBS) provide a framework for action at all levels, enhancing the ability of a country to ensure the productivity, diversity and integrity of natural systems and, as a result, the ability of a country to develop sustainably. Any domestic policy aiming at making biological resources a viable vehicle for sustainable development needs to be based upon a clear NBS.<sup>8</sup> For example, measures addressing access and benefit sharing should be considered in the NBS prior to developing related legislative, policy or administrative measures.

According to the UNDP/GEF guide for the preparation of a NBS, strategies may incorporate the following elements (Hagan, 1999):

- Biodiversity conservation;
- Sustainable use of biological resources;
- Equitable sharing of benefits derived from the use of genetic resources;
- The conservation and sustainable use of agricultural biodiversity;
- Bio-safety.

Additionally, it is suggested that the NBS address priorities such as:

- Support for projects and programmes that have national priority status and that fulfill the obligations of the Convention;
- Development of integrated national strategies for the conservation of biological diversity and the sustainable use of its components;
- Strengthening the conservation, management and sustainable use of ecosystems and habitats identified as priorities by national Governments;
- Identification and monitoring of wild and domesticated biodiversity components, in particular those under threat, and implementation of measures for their conservation and sustainable use;
- Capacity-building, including human resource development and institutional development and/or strengthening, to facilitate the preparation and/or implementation of national strategies, plans for priority programmes and activities for conservation of biological diversity, and sustainable use of its components;
- Development of innovative measures that create economic incentives for biodiversity conservation and that compensate local communities that incur opportunity costs associated with its conservation;

- Strengthening the involvement of local and indigenous people in the conservation and sustainable use of biodiversity;
- Conservation and sustainable use of threatened coastal and marine biological resources and of the biodiversity of environmentally vulnerable areas such as arid and semi-arid and mountainous areas;
- The conservation and sustainable use of endemic species;
- The integration of social issues, including those related to poverty, with the conservation and sustainable use of biodiversity.

In the formulation of Biotrade country programmes, the NBS is normally taken as a point of departure. For the country programme to be effective, the NBS should elaborate the concepts of trade in biodiversity products and services. For example, the Biodiversity Action Plan of Colombia provides a solid base for the country programme, as it makes explicit reference to trade and biodiversity in the sections on “promotion of systems for sustainable management of natural resources” and “sustainable development of the economic potential of biodiversity”. Likewise, the National Biodiversity Policy and

Strategy of Ecuador 2001-2010 includes the objective of “promotion of sustainable and equitable use of biodiversity”, and one of the main objectives of the NBS that Peru is formulating is “economic development promotion based on sustainable use of biodiversity with active involvement of the private sector”. In both countries, Biotrade seeks to support the implementation of these sections. Finally, CAN, with the financial support of the Inter-American Development Bank, has finished the formulation of the regional biodiversity strategy. Biotrade, CAN, and CAF through the Andean Biotrade Programme supported the formulation of the above-mentioned strategy and are currently supporting its implementation in the areas of both trade and biodiversity.

### ***Legal frameworks on access to genetic resources***

Legal frameworks on use, access and benefit sharing associated with genetic resources are a prerequisite for trade and investment in biological resources. Many countries have made significant progress in developing the legal basis on access and benefit-sharing regimes. Nevertheless, while most countries are still formulating such frameworks, access and benefit sharing is taking place through contractual arrangement, which can be negotiated to reflect the spirit of the CBD and achieve its objectives. However, legislation is essential to ensure that contractual arrangements serve the strategies and policies set by the Government to comply with the related provisions of the CBD (UNEP, 2000).

The Secretariat of the CBD prepared a number of documents to give some guidance to those countries in the process of establishing or planning to establish access laws, regulations and policy and to provide some preliminary standards for users seeking access in countries without any provisions on access. As part of the efforts to assist countries in the development of access legislation, the CBD also established a Panel of Experts on Access and Benefit Sharing. The Convention does not provide model regimes, but rather a set of guidelines and requirements for the enactment of national legislation. The following are the basic principles for the formulation of legislation on access to genetic resources and sharing of benefits derived from its use:

- Each country has the authority to control access to its genetic resources, which is “subject to national legislation” (Article 15.1 of the CBD).
- The CBD (Article 15.2) encourages countries to “create conditions to facilitate access to genetic resources for environmentally sound uses by other Contracting Parties and not impose restrictions that run counter to the objective of the Convention”.
- Access to genetic resources “shall be on mutually agreed terms”, and “subject to prior informed consent of the Contracting Party providing such resources, unless otherwise determined by that Party”, and it shall be encouraged only if the Party seeking access will put the genetic resources to “environmentally sound uses” (Articles 16.3, Article 19.1,2, Article 15.2,4,5) (UNEP, 1995).
- Countries should “take all practicable measures to promote and advance priority access on a fair and equitable basis by Contracting Parties, especially developing countries, to

the results and benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties on mutually agreed terms” (Article 19.2).

- National laws on access to genetic resources may give special attention to the commercial importance of species that contain useful genetic resources, but measures need to be taken to manage it consistently with Article 10 (b), which requires that no harm be done to biological diversity from the use of biological resources.

Access legislation should be formulated with conservation goals and sustainable use of biodiversity in mind, as well as access and benefit sharing. Legislation should ensure that access activities create minimum adverse environmental impact and promote the sustainable use of genetic resources, and that fair and equitable benefit sharing contributes to conservation measures and improves the living standards of local people. Such laws should be clear, simple, and adapted to the priorities of individual countries, allowing flexibility, transparency and low transaction costs. This will facilitate further implementation of legislation and future commercial arrangements on genetic resources, ensuring benefits for both recipients and providers of resources (UNEP, 1995). Legal frameworks will also require a review of other international agreements relevant to the country to ensure that laws do not restrict or undermine the position of the country in other ongoing international negotiations and vice versa.<sup>9</sup>

For countries in the process of enacting legislations on access, the CBD notes<sup>10</sup> that it is essential that there be a preparatory process where the relevant stakeholders are identified and the needs, opportunities, resources and capacities of the countries are assessed for successful implementation.

Developing access laws may involve changing existing legislation, either through stand-alone legislation or through additions to a framework of sustainable development, nature conservation or biodiversity laws covering a broader range of biodiversity-related issues or through legislation relating to a specific sector, such as fisheries, forestry or protected areas. In the case of stand-alone legislation, only certain sets of genetic resources are covered, such as fish genetic resources or genetic resources in protected areas. In practice, these laws have either been changed as appropriate or, in the case of new legislation, included as provisions related to access to genetic resources and benefit sharing. When sectoral or issue-specific laws are used, only a certain set of genetic resources is covered. The other approach is to establish stand-alone legislation on ABS.

From an analysis of legislation that has been adopted and is being developed, a set of generic elements emerges, including the scope of application of the laws, property rights and ownership and definitions, requirements for prior informed consent (PIC), PIC procedures, requirements for mutually agreed terms, partners to the mutually agreed terms, and monitoring and enforcement measures (UNEP, 1999). The Panel of Experts on Access and Benefit Sharing also notes the importance of flexibility of laws, regional cooperation and capacity building to allow all stakeholders to participate effectively in formulating and implementing access legislation (UNEP, 2000).

It is suggested that Governments establish a national focal point and have one or more competent national authorities to deal with ABS. Appointing competent national institutions that have clear legal power and competencies is vital for the execution and implementation of provisions included in the laws. A national focal point would also help improve the coordination of the ABS policy process, as well as overseeing the implementation of strategies (UNEP, 2000).

Finally, the Panel suggested that, in the absence of legislation for access to genetic resources and benefit sharing, countries may voluntarily adopt measures and guidelines. Examples include:

- Common policy guidelines for participating botanic gardens on access to genetic resources and benefit-sharing;
- Swiss Draft Guidelines on Access and Benefit-Sharing regarding the Utilization of Genetic Resources;
- The Micro Organisms Sustainable Use and Access Regulation International Code of Conduct (MOSAICC);
- The FAO Code of Conduct for Collecting and Transferring Plant Germplasm.



## Capacity building in the area of traditional knowledge, access and benefit sharing

Achieving sustainable development is not primarily a technical or scientific challenge, although there is much to learn about how ecosystems work and respond to human activity. Nor is the challenge merely to manage natural resources more effectively. Rather, it is about dealing with people and their diverse cultures, interests, visions, priorities, and needs.<sup>11</sup> Policies, strategies and laws are only as good as the process through which they are developed. Wide stakeholder involvement in the definition of the objectives of legislation facilitates its implementation and increases its acceptance and practical application. Furthermore, multi-stakeholder partnerships, which could be an effective way to promote the sustainable use of genetic resources and TK, require equal access to relevant information and the acceptance of the diverse values, interests and knowledge of the parties involved. Civil society, including local and indigenous communities and the private sector, should therefore have a better understanding of how to structure and sustain productive partnerships.

A basic requirement for wide stakeholder involvement is a decision-making process that includes the participation of all possible actors. Such a process strengthens the meaning and reality of the principles of “inclusiveness” (i.e. engaging the relevant stakeholders in a process), “transparency” (openness) and “accountability” (which gives legitimacy to any process and decision reached). Through inclusiveness and accountability, stakeholders, such as local and indigenous communities acquire a true capacity to deal with the changing environment as they enter the transition towards sustainable development. The process requires a growing social awareness, higher levels of social participation, and new insights into the ecological processes of change and self-renewal. Extended responsibilities and competence in the sustainable development approach means “socio-economic, political/educational, technological, and cultural/spiritual changes”, and that in turn means:

- Socio-economic competence enables people to obtain collective responsibility and self-management;
- Political/educational competence provides people with the capacity to grapple with issues of democracy and justice, enhancing their own views on how to achieve the desired level of well-being;
- Technological development and property recognition imply the recognition of endogenous evolutionary knowledge and skills complemented by international cooperation for sharing adequate technologies;
- Cultural and spiritual recognition means a real understanding of the basis of human existence and the foundation of healthy sustainable human society. This point is important in the case of indigenous people.

In short, empowerment for sustainable development means the capacity to access and utilize options such as cultural and spiritual space, recognition and validation of indigenous knowledge, land entitlement and other resources, income, credit, information, training and participation in decision-making to meet daily needs without compromising future options (Singh and Vangile, 1995).

A second requirement for wide stakeholder involvement is capacity building. The CBD regards capacity building as essential to fully implement provisions on TK, access and benefit sharing. It is necessary to strengthen special capacities in the fields of taxonomy, legal drafting on access to genetic resources, negotiation skills, and collection, storage, cataloguing and economic valuation of genetic resources, as well as to develop effective tools for TK protection, such as *sui generis* systems and suitable existing IPR regimes (UNEP, 2000). Since the CBD came into force, the number of projects to assist developing countries in developing capacities in these areas has been increasing.

Multi-stakeholder involvement is especially necessary in the area of trade and biodiversity, which is relatively new and characterized by the sometimes diverging and opposing views of the actors involved (e.g. private sector, nature conservation groups, local and indigenous communities). The Biotrade country programmes intend to contribute to empowerment and capacity building for the different groups involved in the relevant areas. It also tries to give inputs to support the development of relevant regulations, policies and strategies through practical ex-



amples. Areas of activity include: legal and policy frameworks, sustainable use of biodiversity, technical and entrepreneurial capabilities, and market information.

### **Traditional knowledge and benefit sharing with indigenous and local communities<sup>12</sup>**

Indigenous peoples and local communities embodying traditional lifestyles are referred to in the CBD, but no distinction is made between the two. One should bear in mind that the two categories have important differences and similarities. The main rights that are claimed by many indigenous peoples, but are not normally claimed by non-indigenous communities, are the rights to:

- Under certain conditions, self-determination;
- Collective ownership of lands and territories;
- Exercise customary law according to social and cultural practices;
- Be represented legally and politically through their own institutions; and
- Control their own indigenous knowledge.

Even though they may act and speak as a community, farmers and other local groups do not claim to be a distinct people. Their demands for land rights concentrate on land tenure rather than rights to territory. Many local farming communities still operating outside the major commercial arena are also socially, politically and economically marginalized. Both indigenous and local communities have common concerns on issues dealing with the fear of the globalization of trade, farmers' rights, and the strengthening of rights over TK and know-how in the light of forecasts of world food shortage.

Indigenous peoples<sup>13</sup> inhabit large areas of the earth's surface and are spread across the world from the Arctic to the South Pacific. They live in approximately 70 countries, comprise 300 million people<sup>14</sup> and tend to be among the poorest of the poor. Indigenous peoples have been particularly vulnerable to the loss of their heritage<sup>15</sup> as distinct peoples. Usually viewed as "backward" by Governments, they have been the targets of aggressive policies of cultural assimilation. Indigenous people have struggled to achieve international recognition of their right to a distinct status and identity, but their knowledge, culture and resources are still not adequately protected from appropriation by outside interests.

Indigenous peoples have an intimate cultural relationship with their land and its natural resources, depending on them to meet their physical, social, cultural and spiritual needs. As many authors have noted, indigenous people embody knowledge and wisdom that is vital to the conservation and the sustainable use of biological diversity. This knowledge may relate to planting and harvesting methods, the use of natural herbs and other material for medicinal purposes, and the understanding of changes that have occurred to local biological features and landscapes. It is the accumulated knowledge and practices of these peoples that have protected and enhanced biodiversity over generations.

In general terms, indigenous knowledge is unique and traditional and exists locally within and is developed around specific conditions of people indigenous to a particular geographic area. It can also be called traditional and local knowledge. It is the basis for local decision-making in agriculture, health, natural resource management and other activities. It is also embedded in community practices, institutions, relationships and rituals, and is essentially tacit knowledge that is not easily codifiable (World Bank, 1998).

TK associated with biological resources is an intangible component of the resource itself. TK has the potential of being translated into commercial benefits by providing leads for the development of useful products and processes. The valuable leads provided by TK save the modern biotech industry time, money and investment in research and product development. Hence, a share of benefits must accrue to holders of TK. One of the three central pillars of the CBD is the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Where does benefit sharing stand in terms of local and indigenous communities? Many years after the CBD's enactment, there is very little to show in terms of new and substantial benefits accruing to indigenous and local people (GAIA/GRAIN, 2000).

A number of factors influence the degree to which indigenous and local communities benefit from the use of both genetic resources and related knowledge, innovations and practices. The most important factor is probably the socio-political status of communities within society. This will influence the degree to which their basic human rights are respected, and whether their values, cosmovision and systems of rights and responsibilities are understood and respected (Byström, Einarsson and Axelsson, 1999). It also determines the extent to which communities participate in decision making and the development effect of activities in which they are involved. Some of these factors will be elaborated upon in the following paragraphs.

### ***Respect for basic human rights of indigenous people***

Access legislation and supplementary laws to regulate the use of TK, innovations and practices of indigenous communities should consider the human rights of these communities. Provisions included in international legal instruments, such as ILO Convention 169,<sup>16</sup> the UN Draft Declaration on the Rights of Indigenous Peoples, the Principles and Guidelines for the Protection of the Heritage of Indigenous People and other relevant documents provide some guidelines for the protection of TK holders. Some basic rights considered in the ILO Convention on behalf of indigenous communities are:

- Respect for cultures, ways of life, traditions and customary laws of indigenous and tribal peoples;
- Acknowledgement that indigenous peoples will continue to exist as a part of their national society with their own identity, their own structures and their own traditions;
- Necessity to protect structures and ways of life of indigenous peoples;
- Right of indigenous peoples to participate in the decision-making process of the countries to which they belong;
- Right of the majority of indigenous peoples to speak for themselves and take part in the decision-making process as it affects them.

The legal framework on ABS may be supplemented by additional laws in order to safeguard rights of indigenous communities and allow them to obtain benefits from programmes involving genetic resources and associated TK, innovations and practices, fully respecting their rights included in national and international documents.

### ***Participation***

Indigenous people have the right to participate in the formulation, implementation and evaluation of the national and regional plans and programmes that directly affect them. Through the consultation process, they have a right to express their points of view and influence decision-making procedures. Governments must provide the environment and conditions for the meaningful contribution of indigenous people. This can consist, for instance, of helping indigenous people to acquire the skills and capabilities needed to understand and decide upon existing development options (ILO, 1998).

Moreover, Article 15 of ILO Convention 169 established the following: “The rights of the peoples concerned to the natural resources pertaining to their lands shall be specially safeguarded. These rights include the right of these peoples to participate in the use, management and conservation of these resources.” This provision holds for access and benefit sharing. Similarly, Decision III/14 of the CBD’s Conference of Parties requests the development of national legislation and corresponding strategies for the implementation of Article 8 (j) in consultation with representatives of their indigenous and local communities. Effective participation of communities in the law development process may ensure successful implementation of the laws in question and equitable possibilities of benefit sharing.<sup>17</sup> National authorities should generate opportunities for indigenous people to express their concerns and create a mechanism for dialogue with grassroots indigenous organizations, including women’s institutions.

Furthermore, communities should be provided with legal tools and incentives to conserve their TK and to be able to decide freely to transfer their knowledge. This transfer should be based on their prior informed consent. Supplementary laws should define conditions for such consent. Capacity building and empowerment is necessary to allow communities to express

their prior informed consent effectively. Legal assistance could also be provided for the protection of ancestral lands, resources, conservation and protection of TK.

## **Social impacts and development**

Indigenous people and local communities who decide freely to share their TK should have the opportunity to obtain substantial economic benefits that can be used for community-based sustainable projects. In this connection, concern has been expressed about the social impact, for instance, of paying large sums of money directly to indigenous communities leaders. Royalty payments might increase traditional leaders' power and reduce their accountability to their own people. This might also provoke conflicts between different clans and communities regarding the ownership of TK, as in the case where several communities have traditionally used a medicinal plant but only one of them sells its knowledge to a pharmaceutical company. Moreover, distributing funds through intermediary NGOs does not resolve these problems; the intermediaries cannot avoid choosing which communities and individual leaders they will support (Daes, 1997).

Government authorities and indigenous and local communities should jointly design sustainable projects to ensure that cash payments for the use of their TK contribute to poverty reduction, sustainable livelihoods, social equity and gender equality. Indigenous groups will also need to develop new institutions for dealing effectively with outsiders and external financing. This, rather than the development of intermediary institutions, should be encouraged through capacity building and empowerment processes.

Indigenous communities have the right to decide their own development and to exercise control over their own economic, social and cultural development. This means that sustainable use of genetic resources located in indigenous ancestral lands should be planned in the light of the potential social, cultural and economic impacts on lifestyles and protection of TK. Programmes should therefore attempt to integrate the holistic cultural views of these populations. Moreover, all development projects should be preceded by an assessment, conducted in partnership with the peoples concerned, of the potential impacts on the heritage of indigenous peoples.<sup>18</sup>

Biotrade, through its country programmes, seeks to enhance the role played by local and indigenous communities in conserving and using their biological diversity, knowledge, innovations and practices. These programmes promote the wider application of this knowledge, encouraging equitable sharing of benefits arising from the utilization of this knowledge with its holders, as well as adding value to the products and services derived from biodiversity.

Decision 391 of CAN and the initiatives taken by Colombia and Peru illustrate attempts that have been made to recognize the rights of indigenous communities over their bioresources and associated TK and to lay the foundation for development of legal instruments for equitable sharing of benefits with the indigenous communities. These are briefly described below, and further details on the relevant issues covered by these experiences are given in the papers by Manuel Ruiz and María del Pilar Pardo in this book. For additional information on the matter, see [www.biotrade.org](http://www.biotrade.org).

### ***Decision 391 of CAN on a common regime on access to genetic resources***

UNCTAD, CAN and CAF have elaborated a joint programme to support the development of the Biotrade Initiative in the Andean Region. One of the objectives of this programme is to support the implementation of the Andean Biodiversity Strategy in the area of trade and biodiversity. Decision 391 of CAN on a Common Regime on Access to Genetic Resources is essential in this process. It seeks to regulate access to genetic resources of Member States and their derived products with a view to (a) establishing conditions for just and equitable participation in the benefits generated from access, (b) establishing the basis for the recognition and valuation of genetic resources and their derived products, as well as of their intangible components, particularly in the case of indigenous communities, (c) promoting the conservation and sustainable use of biodiversity, (d) promoting the development and enhancement of

local, national and regional scientific, technical and technological capacities, and (e) strengthening the negotiating capacities of Member States.

With respect to TK, Decision 391, at the subregional level, provides formal agreements on covenants, contracts, letters of intent and other instruments for parties to formalize obligations and commitments and is the legal instrument for indigenous people to ensure that their knowledge, innovations and practices are used subject to their consent and to the conditions of benefit sharing.

Nearly four years after being ratified, Decision 391 has yet to be fully implemented in Ecuador, Peru and Bolivia. This delay is due to policy concerns, practical difficulties, legal uncertainties, differing interpretations, institutional limitations, and data and informational gaps. These constraints limit Decision 391 in terms of becoming an effective and efficient legal instrument for these countries. Another challenge is posed by the detailed procedures and terms of the common regime.

### **Colombia and Peru**

Colombia acknowledges the relationship between TK and the cultural implications of biodiversity use and conservation, as well as the emphasis needed on a holistic and cultural approach to biodiversity and its associated components. The country recognizes that special measures and tools are needed to protect TK, innovations and practices in order for indigenous, Afro-Colombian and local communities to fully exercise their collective rights.

The first BIOTRADE country programme started in Colombia in 1999 and is coordinated by the Alexander von Humboldt Institute. The programme, called "*Biocomercio Sostenible*" (Sustainable Biotrade), is developing work along different lines: networking, information systems, business development, market information, investment, and financial mechanisms. A number of demonstration projects are being developed in the areas of NTFPs such as medicinal plants, essential oils, and ecotourism. Indigenous communities receive assistance in improving their business skills, in formulating market strategies, and in obtaining market information. Case studies have shown how the protection and use of TK, the protection of biodiversity and economic development are interconnected.

Peru has taken important steps in developing legal instruments to protect the knowledge of indigenous people in the area of biodiversity. The draft proposal on TK rests on three main pillars: (a) the use of contracts as the legal instrument by which indigenous knowledge related to biodiversity can be negotiated by indigenous peoples themselves and through which their prior informed consent can be obtained; (b) the recognition of the collective nature of indigenous knowledge (while acknowledging the fact that within communities individual intellectual efforts are also very important); and (c) the possibility for knowledge in the public domain to be subject to contractual provisions upon agreement between parties.

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## Notes

- <sup>1</sup> Biotrade Initiative; Trade, Environment and Development Branch; UNCTAD, Geneva.
- <sup>2</sup> See: [www.biotrade.org](http://www.biotrade.org)
- <sup>3</sup> BIOTRADE is active in Brazil, Colombia, Ecuador, Peru, Uganda and Venezuela. Activities are also carried out in Botswana, Malawi, Namibia, Zambia and Zimbabwe through Association PhytoTrade Africa, and in Indonesia with the collaboration of the Ramsar Convention. Other countries will follow in the medium term. BIOTRADE benefits from funding from the United Nations Foundation/United Nations Foundation for International Partnerships (UNF/UNFIP), the Andean Development Corporation (CAF), and the Governments of the Netherlands, Norway and Switzerland. See [www.biotrade.org](http://www.biotrade.org).
- <sup>4</sup> BIOTRADE is also working with the ITC (UNCTAD/WTO) on the implementation of the BioTrade Facilitation Programme (BTFP). This project will provide practical support to enterprises in accessing export markets for biodiversity-based products and services coming out of the BIOTRADE country programmes. See [www.biotrade.org](http://www.biotrade.org), Biotrade Facilitation Programme.
- <sup>5</sup> Article 8(j) states that: "(Each contracting Party shall, as far as possible and as appropriate,) subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biodiversity and promote the wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of benefits arising from the utilization of such knowledge, innovations and practices".
- <sup>6</sup> Information is taken from a draft paper by Anida Yupari, prepared for UNCTAD BIOTRADE in autumn 2000. That paper was updated by David Vivas and edited by Lorena Jaramillo in 2001 and can be obtained through [www.biotrade.org](http://www.biotrade.org).
- <sup>7</sup> The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) is part of the package signed by all WTO members in 1994. The TRIPS Agreement ensures that all signatories



- provide minimum standards of protection in a number of different areas of intellectual property law (e.g. patent, copyright, geographical indications, and so on). Of particular relevance to biological diversity is Article 27.3(b) of the Agreement.
- <sup>8</sup> An important aspect of the link between access and the benefits arising from the use of genetic resources and conservation and sustainable use of biodiversity is that stakeholders take into account the relevant national biodiversity strategies and action plans (UNEP, 2000).
  - <sup>9</sup> It is advisable that legislation under development takes into account and follows the development of the multilateral system for access and benefit-sharing for plant genetic resources for food and agriculture currently being considered in the FAO negotiations.
  - <sup>10</sup> The CBD bases the access regime on the parties to genetic resource transactions: the providing countries, which are countries of origin or those having acquired the genetic resources in accordance with the Convention, and the users of genetic resources provided by other parties. This section of this paper includes a summary of the guidelines for the providers of genetic resources included in UNEP (1999).
  - <sup>11</sup> The functions of the national focal point and competent national authority/authorities are defined in the Panel's report.
  - <sup>12</sup> This section considers briefly some issues that should be taken into account when considering involving local and indigenous communities. The paper gives particular emphasis to indigenous people *strictu sensu*.
  - <sup>13</sup> Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing in those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal systems. UN Sub-Commission on Prevention of Discrimination and Protection of Minorities.
  - <sup>14</sup> In Latin America, in the early 1990s, the number of indigenous people based mainly on linguistic classifications was estimated at approximately 40 million people, or 10 per cent of the total population, with the largest concentrations in Central America and the Andes (Maquette, 1996).
  - <sup>15</sup> The "heritage" of indigenous people includes all moveable cultural property as defined by the relevant conventions of UNESCO; all kinds of literary or artistic creation such as music, dance, song, ceremonies, symbols and designs, narratives and poetry and all forms of documentation of and by indigenous peoples; all kinds of scientific, agricultural, technical, medicinal, biodiversity-related and ecological knowledge, including innovations based upon that knowledge, cultigens, remedies, medicines and the use of flora and fauna; human remains; immovable cultural property such as sacred sites of cultural, natural and historical significance and burials (United Nations, 2000).
  - <sup>16</sup> ILO Convention 169 is the most comprehensive and up-to-date international instrument on the conditions of life and work of indigenous and tribal peoples.
  - <sup>17</sup> BIOTRADE country programmes recognize that local and indigenous communities have rich traditions of knowledge associated with their biodiversity and biological resources, as well as practices related to those resources.
  - <sup>18</sup> Further studies may be necessary to define tools to assess potential social and cultural impacts that bioprospecting arrangements on indigenous lands might have.



# GERMAN TECHNICAL DEVELOPMENT COOPERATION: MEASURES TO PROMOTE IMPLEMENTATION OF ARTICLE 8(J) OF THE CONVENTION ON BIOLOGICAL DIVERSITY

Christine Schaefer

## German efforts to promote the implementation of the CBD

The Convention on Biological Diversity (CBD) has now been ratified by 187 countries and the European Union. By ratifying the convention, Germany has committed itself not only to conserving biodiversity at home but also to helping developing countries implement the steps called for by the convention. Bilateral measures taken by Germany focus on projects that are innovative; they may also be ones enabling partners to meet the institutional requirements for major projects and to plan for projects that seek to intervene in four focal areas: traditional knowledge (TK); access to genetic resources and benefit sharing; implementation of the Biosafety Protocol; and schemes for making sustainable use of biodiversity.

Currently approximately 20 individual bilateral projects are being implemented, and a number of others are at the planning stage. Joint projects function on the basis of bilateral agreements with government and non-government institutions in partner countries. Increasingly, cooperation is sought with a variety of groups within society, including indigenous organizations. As a result, the majority of biodiversity projects cooperate in one way or another with national and local non-governmental organizations (NGOs). This cooperation extends from involving the organizations in project planning to support them in their rights to dispose freely of their resources, knowledge, benefits and land. The participation of civil society is seen as an important factor in the success of a project.

Germany is helping developing countries preserve their natural environment through the BIODIV<sup>1</sup> project, which began in 1994 and is being implemented by GTZ on behalf of the German Federal Ministry for Economic Co-operation and Development (BMZ). The project develops ideas and policy and assists in participating in the international debate on biodiversity. It supports developing countries directly in their efforts to implement the CBD at the national level.

The following discussion focuses on support extended by GTZ to indigenous and local communities in developing countries for maintaining and strengthening their TK.

## Activities of GTZ in the area of traditional knowledge

Article 8(j) of the CBD recognizes the importance of TK.<sup>2</sup> Attempts are currently being made to protect the cultural identity of indigenous people and to strengthen their capacity to help themselves. It is now recognized that, by developing plant and animal species for various purposes over the centuries, indigenous and local communities have contributed to the world's stock of genetic resources and to knowledge about biological resources and ecological processes. The TK of these people provides scientists with information useful for developing various products, especially in the areas of agriculture and medicine. It also plays an important part in ensuring the conservation of genetic resources. To support this understanding, the CBD stresses that indigenous and local communities should share in the benefits arising from the use of their knowledge, and that they should be given incentives to conserve biological resources and TK.

However, this whole subject gives rise to many questions such as how to define TK, how to account for collective rights, how benefits should be distributed between different communities and groups (e.g. between men and women, between old and young), and so on.

The BIODIV project contributes actively to the international debate on these issues. Several meetings have been organized since 1999. The first meeting was held in January 1999 in Siuna, Nicaragua, on issues relating to biodiversity, intellectual property rights (IPR) and the

rights of indigenous communities. A second meeting was held in Seville, Spain, in March 2000 at the CBD Intersessional Working Group on TK. A third meeting was held in May 2000 during the Conference of the Parties (COP) to the CBD in Nairobi, Kenya. The BIODIV project helped indigenous women's organizations participate in the work of drafting recommendations for a programme of work on TK. Many of the questions arising at the three meetings were addressed during the negotiations on this first programme of work on Article 8(j) of the CBD, which was endorsed at the fifth COP and is now being implemented.

### **The BIODIV project's support for the TK work programme**

Following are examples from the Philippines, Guinea, China and Peru where BIODIV has supported activities promoting implementation of the work programme on TK.

#### ***Bioprospecting programme in the Philippines***

Over the last few years, the South East Asia Regional Institute for Community Education (SEARICE)<sup>3</sup> has been working jointly with academics of various disciplines. It has campaigned hard for a fair and balanced regulatory framework to control access to genetic resources and related TK, actively monitoring and supporting national implementation of legal provisions<sup>4</sup> that have been put in place for this. Since 1998 SEARICE and its partners have been supported in their efforts by the BIODIV project through a Bioprospecting Programme that coordinates various educational schemes and capacity-building activities for developing workable procedures that are acceptable to all sections of the Filipino society. Communities are given the necessary skills to recognize and document bioprospecting activities, and to preserve the integrity of their traditional systems of knowledge.

#### ***Medicinal plant workshop in Guinea***

In Guinea in the spring of 1999, the BIODIV project in conjunction with the Biotrade initiative of UNCTAD and various governmental and non-governmental institutions in Guinea organized a national workshop on medicinal plants. The workshop brought together people from different sectors who were working on issues relating to medicinal plants. Attendees included: traditional healers from local communities, scientists, government representatives, and representatives of local NGOs, development projects, and international organizations. The aim of the workshop was to draw up an action plan in support of a national strategy for the conservation, sustainable use, and commercialization of medicinal plants. The workshop raised the issue of utilizing the knowledge of traditional healers. The participants discussed IPR and existing regulations on access, and traditional healers described cases of unmonitored bioprospecting by foreign companies and researchers. The resulting action plan aims to enhance understanding of this issue and to bring about the creation or improved enforcement of relevant regulations.

#### ***Harnessing TK in southwest China***

Southwest China is one of the richest regions of the world in terms of cultural and biological diversity. Over many generations, the ethnic minorities of Southwest China have built up considerable knowledge and developed a set of technologies that have resulted in the creation of unique modes of living and cultural landscapes in close interaction with biodiversity resources. Project activities are still at the planning stage and include a participatory research and capacity-building programme designed to enhance biodiversity and to validate TK, innovations, and practices in natural resource management. The project will be carried out in conjunction with the non-governmental Center for Biodiversity and Indigenous Knowledge as a follow-up to a congress held in Yunnan, China, in July 2000 on the links between cultural and biological diversity. The findings of the conference, which was co-sponsored by BIODIV, are reflected in this discussion.<sup>5</sup>

### ***TK, gender and biodiversity in Peru***

This project, aimed at securing food –security and conservation and making sustainable use of biodiversity, seeks to mobilize and strengthen local knowledge in these fields. Support for the project began in July 2000. The drafting of action plans will especially consider gender aspects, as women do the main work in terms of agrobiodiversity conservation, and will follow a participative approach. TK will be acknowledged, documented, protected and disseminated. Lobbying at the national level will also be undertaken to support conservation of biological diversity. A further objective will be to secure the inclusion of TK, innovations and practices in the design of national development strategies and programmes. TK will only be disseminated with the prior informed consent of the communities concerned. The implementing organization will be the Centro de la Mujer Peruana Flora Tristán, a Peruvian NGO specializing in gender issues.

### **Selection of cases demonstrating the work of GTZ in implementation of CBD article 8(j)**

#### ***Capacity-building for COICA***

The umbrella-organisation COICA (Coordinadora de las Organizaciones Indígenas de la Cuenca Amazónica) represents nine national indigenous organizations, or the majority of such organizations in the tropical lowlands of South America. COICA activities, supported by GTZ, are aimed at:

- Enhancing interaction and communication between the constituent organizations and local indigenous groups
- Defending rights to land and resources
- Securing the right to self-determination
- Safeguarding human rights, including IPR relating to TK

BIODIV is also helping to prepare a medium-sized project proposal for seeking funding from GEF. Current discussions envisage provision of support in a number of areas: (i) creation of a coordination structure; (ii) training of grassroots disseminators for improving COICA's services to indigenous organizations; (iii) education of young leaders who will be able to represent indigenous peoples and defend their rights; and (iv) development of sustainable financing mechanisms for maintaining indigenous umbrella organizations. The CBD programme of work on the implementation of Article 8(j) plays a major role in all these activities.

#### ***E-mail conference on indigenous land rights***

In the summer of 2000, a GTZ initiative was launched to discover how systems of land tenure influenced resource management in indigenous territories. Twenty-six development projects working with indigenous peoples in Central and Latin America were involved in the survey, which was carried out via an e-mailed questionnaire. Among the issues examined was the extent to which the system of land tenure and the operation of customary law influence development projects. As well as providing a comprehensive survey of the situation with regard to land rights and land tenure, the e-mail conference revealed a close correlation between these factors, TK, and IPR. The conference revealed that within indigenous and local communities, a strong link existed between the system of land tenure, resource use, and TK, land ownership arrangements being inseparable from traditional knowledge, innovations, and practices. It was found that clarity and acceptance of arrangements with regard to indigenous land-rights would help ensure preservation of TK and biodiversity.

A number of parallels exist between land tenure and TK: both are collectively owned, unlike in western societies, where the concept of individual ownership is paramount. Land tenure arrangements and intellectual property regimes must therefore allow for collective ownership. When it comes to sorting out IPR relating to TK, for example, the fact that the same indigenous institutions manage land tenure and administer customary law has to be taken into account. These institutions often have a strong need for institutional strengthening and exchange of information with the indigenous communities.

### ***TRIPS, the CBD and the seed sector***

BIODIV supports two supra-regional projects relating to basic conditions affecting indigenous and local peoples in their management of agrobiodiversity. These are Managing Agrobiodiversity in the Rural Areas and Development of Framework Conditions for the Utilisation of Biotechnology and Genetic Engineering. Activities addressing the relationship between the CBD and the TRIPS Agreement and their implementation in developing countries play a major role in these projects.

### **Lessons learned**

Cultural and biological diversity depend on respect for the integrity of indigenous cultures and on the right of indigenous and traditional peoples to retain control over their cultural institutions, territories, languages, and systems of knowledge.

#### **Box 1: Lessons learned from the Talaandig people in the Philippines: A case study**

Experiences in the pilot region of Mount Kitanglad, North Mindanao, in the province of Bukidnon, Philippines, show that the mechanism of prior informed consent (PIC) does not guarantee the backing of the whole community, because it may be based on the approval of a single individual. The Talaandig community favours “free prior informed consent” (FPIC), meaning that any proposed enquiries regarding the community’s resources and knowledge have to be discussed and agreed to by all the members of the community. This is provided for in the Indigenous Peoples Rights Act, which has been in force in the Philippines since 1997.

Although the government recognizes the Talaandig community’s ancestral domains, access to community territory is still managed by the state, without reference to traditional authorities. To improve this situation, the community has opened an office in the nearest town, staffed by an official to whom enquiries must be addressed about access to community territory, resources and knowledge. The official decides whether permission can be given immediately (as in the case of climbing tours) or whether the community must be consulted and FPIC obtained (as in the case of bioprospecting activities by international companies, including prospecting for TK).

Inside the Talaandig people’s ancestral territory, sites of special cultural significance have been established that serve as markers of the territory and as checkpoints at which members of the clan (cultural guards) ensure that individuals and organizations have approved access. This system, which is strongly spiritual, safeguards the sovereignty of the Talaandig people over their own territory.

Commercial interest in TK about medicinal plants in the area is increasing, both within the Philippines and among international companies and research institutions. This has lent urgency to the question of IPR, and to that of establishing sites of special cultural significance. The Talaandig people are now keeping records of medicinal plants and related knowledge in order to protect them from unauthorized exploitation. This process has, however, only just begun.

Since government bureaucracies do not have a balanced relationship with indigenous people, appropriate policies and legislation are required for establishing legal systems. These protect traditional resources and at the same time enhance the ability of local communities to maximize control over their cultural and biological resources. Furthermore, the direct participation of indigenous peoples should be secured in every policy matter affecting their rights.

Based on the experiences of GTZ, any attempt to safeguard and harness TK should take the following points into account:

- Indigenous and local cultures should be viewed holistically. Their resources and knowledge are inseparable from their culture.
- Indigenous cultures are complex: they are characterized by internal, gender, and inter-generational differences and specializations. This means that access to knowledge and resources must be negotiated with specific indigenous groups; generalizations are not possible. This fact is especially significant when it comes to benefit sharing arrangements.
- Because indigenous peoples often have oral traditions, loss of TK and biodiversity is closely related to cultural and linguistic loss. This fact needs to be recognized in activities pertaining to documentation in development projects.
- Indigenous organizations, whether local or of an umbrella type, need to have their capacities built and their institutions strengthened. This also applies to establishing linkages with donor organizations and setting up information management systems.

## Recommendations

Considerable experience has been gained through work on the BIODIV project in several countries and through meetings, workshops and individual discussions with representatives of traditional and indigenous communities. This section presents recommendations in the key areas examined at UNCTAD's Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices.

### ***Systems for protecting traditional knowledge and ensuring benefit sharing***

Measures designed to secure recognition of indigenous and local people's rights over resources and intellectual property must include:

- Steps to strengthen partnerships between local government and local people
- Establishment of wider networks and linkages among indigenous peoples, NGOs, universities and local governments, with a view to broad-based management of various ecosystems
- Steps to enhance local control over traditional resources, including mechanisms to ensure adequate benefit sharing from the wider use and application of indigenous and local knowledge, innovations, and practices

As regards the creation of *sui generis* systems for managing indigenous IPR, suitable legal frameworks for the protection of the knowledge, innovations and practices of indigenous and local communities must be established that acknowledge the socio-cultural diversity between and within communities. Such systems must be established in consultation with the communities in question.

Local groups need to have secure access to the lands in which their knowledge and spiritual world are based. Forced movement of native communities should be discouraged as being profoundly destructive to indigenous and other traditional societies, as well as to biological and cultural diversity. As a matter of course, the issue has to be seen in a larger context, taking into account all the different factors influencing land tenure.

In activities, projects, and policies relating to natural resource management, more extensive research and documentation of indigenous knowledge is required. Research results have to be fed back to the local communities and reflected on by them. The findings should incorporate the results of such reflection and should inform decision-making and action. Priorities for research and documentation include:

- Assessing changes in indigenous knowledge, innovations and practices
- Instituting effective participatory schemes for cultural and environmental impact assessment
- Developing criteria and indicators based on local knowledge and perceptions



### ***Harnessing TK for development and trade***

There should be policies, legislation and ethical guidelines ensuring that local and indigenous communities are able to protect their traditional resources (including land, knowledge and genetic resources) but at the same time benefit equitably from the wider use and application of their knowledge, innovations and practices. In order to bring about these changes, programmes and actions should be guided by a holistic approach. This involves finding common ground between scientific, local, and political world views and carefully considering important linkages between culture, nature and the external socio-political environment. It also requires a shift in scientific perspective, towards recognition of different modes of knowing and of the validity of all systems of knowledge.

Global and regional markets can have both positive and negative impacts on biodiversity and local cultures. Generation of income for members of the local community can have a positive impact. However, the commoditization of locally available products, including intangible products such as culture and knowledge, does not of itself ensure that local communities benefit in an equitable and sustainable manner. Positive action is needed to ensure that local communities have access to markets. For example, information can be provided on prices, purchasers, and technologies, and institutional arrangements can be introduced that shorten supply chains.

Measures to develop ecological and cultural capital should be on par with those designed to raise levels of economic consumption. Unless the relevant values are built into measures promoting economic progress, unrestricted pursuit of increased levels of economic consumption will inevitably conflict with the conservation of valuable ecological and cultural resources.

Rather than seeking to maximize consumption, businesses should focus on decreasing the use of resources to the level required to meet the needs in question. There are many models and mechanisms for fostering business cultures that aim to minimize resource use. These include sustainable harvesting techniques, more efficient processing of biodiversity products, and improved storage techniques. TK can make a major contribution to these kinds of innovations. Volatile prices can have dramatic effects on producer behaviour, resulting, for example, in over collection of biological resources. Mechanisms to ensure sustainable harvesting could also include the creation of indigenous marketing organisations, which would also allow greater benefits to flow to indigenous communities because of direct marketing.

### ***Capacity-building needs***

All efforts to promote conservation of TK must include capacity building, ensuring that community members, NGO staffers, and employees of government bodies have the right skills at the right level. New technologies and strategies create a need for effective training, impact assessment, and follow-up support. External agencies may have to develop these skills before they can assist regional and community groups.

### ***Institutional consolidation of indigenous organizations***

Case studies and workshops have shown that both traditional and newly created indigenous organizations have a strong need for institutional support in a large number of areas such as management skills, financial administration and legal affairs. Processes of self-determination should be fostered and support given to grassroots and umbrella organizations and to networks. Linkages between the different levels of these organizations are often weak and in need of special attention. Information management should, therefore, be included in capacity-building activities. Institutions should also be given training in fund-raising and in how to approach donor organizations.

Other institutions that should be considered for capacity building are bodies that grant access to knowledge and biodiversity (see the Philippines case study); bodies dealing with TK in their role as alternative scientific institutions; and indigenous educational institutions such as schools and universities.



### ***Promoting intercultural exchange of experiences***

Actions to promote dialogue, mutual understanding and respect include supporting indigenous groups in creating mechanisms through which communities can exchange experiences of conserving biological and cultural diversity; immersion programmes for outsiders designed to bring about changes in attitude towards indigenous cultures and to improve communication skills; and the inclusion of both indigenous and scientific knowledge in local educational curricula.

Exchanges between indigenous communities (e.g. through mutual visits) can be a powerful means for “bottom-up” capacity building. In particular, cross-border visits between members of the same ethnic group should be fostered in order to promote learning processes. Several regional meetings and workshops on TK and indigenous communities in South-East Asia and Latin America have recommended such a step.

### ***Enablement for policy dialogue***

Local people should be supported in their efforts to conduct policy dialogues and should be provided with appropriate training for such activities. Education and training should focus on young leaders within indigenous and local communities, and young men and women should be helped, through the provision of financial support, to gain access to universities and other educational institutions.

Capacity building should not concentrate just on local communities; it should extend to representatives of local government and NGOs with a view to improving communication and collaboration with local communities. This can lead to the creation of partnerships for developing effective mechanisms for the protection of TK. Capacity-building activities should expose policy makers, officials, and NGO staff members to the daily life of communities, so that their own experiences are fed back into the policy-making process. This would also involve establishing mechanisms for multi-stakeholder dialogue, cooperation and conflict management.

### ***Awareness raising and cultural impact assessment***

Raising education and awareness, both in the countries of origin of biodiversity and TK and in industrial countries, helps increase public understanding of the importance of TK in effectively conserving biological and cultural diversity. Awareness-raising campaigns help communities develop an understanding of the problems associated with bioprospecting and the potential it has for community development. Such activities can mobilize self-help forces and can prompt communities to find their own solutions to problems and also to develop regimes, instruments and institutions for regulating access to their territories, resources and TK. Activities and seminars involving young people have been particularly successful, for this is the group whose future depends on the resources and the associated knowledge being conserved.

The impact of the new instruments of *sui generis* systems and prior informed consent on the cultural identity of communities needs to be assessed so that efforts to conserve the environment in general and biological diversity in particular will enhance development without endangering indigenous cultures. The communities should be assisted in formulating and implementing their own systems of cultural impact assessment.

### ***Documentation of TK***

Documenting TK, or indeed any kind of knowledge, is clearly a vital factor in ensuring its preservation and protection. Yet the problem of guaranteeing rights over, and regulating access to, registers of knowledge has still not been properly addressed. Hence, when it comes to cooperation with research institutions and other stakeholders in the documentation process, the position of local community representatives and indigenous institutions with responsibility for regulating access to knowledge must be strengthened through capacity building.

Any methods or tools for documenting or preserving TK or biological diversity belonging to local or indigenous peoples should be developed in culturally appropriate and gender-sensi-

tive ways. They should take account of the linguistic diversity and the largely oral traditions of indigenous cultures.

## Notes

- <sup>1</sup> Implementing the Biodiversity Convention.
- <sup>2</sup> It stipulates that, “as far as possible and appropriate, and subject to national legislation, parties respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices”.
- <sup>3</sup> A regional NGO.
- <sup>4</sup> See e.g. Presidential Executive Order No. 247.
- <sup>5</sup> For more information about the Center see [www.cbik.org](http://www.cbik.org)

# TRADITIONAL KNOWLEDGE AND THE ENVIRONMENT: STATEMENT BY THE UNITED NATIONS ENVIRONMENT PROGRAMME

**Robert Hamwey**

UNEP would like to draw attention to the important role traditional knowledge (TK) plays in promoting the sustainable management of natural and environmental resources, and to the urgent need to support capacity-building efforts aimed at promoting the use of TK to help ensure sustainable patterns of trade in goods and commodities deriving from natural resources.

For centuries TK has enabled rural indigenous communities to survive in balance with their natural environment. By virtue of providing for this balanced relationship, TK is truly the “science” of sustainable development at the local level. The Rio Declaration clearly recognizes this, stating that “Indigenous people and their communities, and other local communities, have a vital role in environmental management and development because of their knowledge and traditional practices”. This principle is echoed in a number of international environmental agreements, including but not limited to the Convention on Biological Diversity (CBD), the Convention to Combat Desertification, and the Statement of Principles for the Sustainable Management of Forests.

Because TK is closely related to survival and subsistence, it provides a basis for efficient local decision making in agricultural farming and the exploitation of fisheries and forests, ensuring the long-term viability of natural ecosystems so that the resource needs of future generations can be met. In indigenous communities throughout the world, TK has prevented land and soil degradation, fisheries depletion, biodiversity erosion and deforestation.

With the advent of globalization, however, TK and its environmental benefits are threatened. On the one hand, world trade has created increased demand from distant markets for locally sourced agricultural, fisheries and forest products, pushing producers to harvest resources beyond the sustainable limits that TK would normally advise. On the other hand, transmission of TK to current and future generations is faltering as global communications and mobility attract younger generations to a diverse set of non-traditional livelihoods, often in distant urban settings. The challenges of globalization therefore include identifying ways for local communities to fully participate in, and benefit from, globalization in an environmentally sustainable manner while ensuring that traditional livelihoods and TK are competitively compensated in financial terms to prevent their erosion.

Together with UNCTAD, UNEP believes that efforts to enhance countries’ capacities to deal with trade/environment/development issues, including the promotion of TK, are critical to the sustainable management of globalization. UNEP and UNCTAD initiated the joint UNEP-UNCTAD Capacity-Building Task Force on Trade, Environment and Development (CBTF) to strengthen the capacities of countries, particularly developing ones, to address such issues at the national level and to participate effectively in related deliberations at the international level.<sup>1</sup> The CBTF was launched in 2000 with an invitation to national institutions (both governmental and nongovernmental) in developing countries to propose projects aimed at building national capacity in trade, environment and development.

Many countries have responded to a CBTF call for proposals, and among proposed projects are several with strong TK elements. In view of the relevance of TK to trade, environment and development, this is not surprising. Some countries have proposed case studies on TK and trade; others have requested training on the relationships between TK, trade, environment and development. UNEP and UNCTAD encourage countries to propose additional projects exploring the contributions of TK to sustainable development.

The knowledge, innovations and practices of indigenous and local communities have many applications that can help alleviate poverty in rural areas, provide food and medical care, generate incomes for local and indigenous communities, and conserve biodiversity. Numerous UN forums have emphasized the important role of TK in the development process, in particular in sectors such as traditional medicine, traditional agriculture and folklore/handicrafts.

To help developing countries promote – and maximize the net development gains of – TK, the CBTF will work in close cooperation with the UN Development Programme, the World Bank, the World Health Organization, the Convention on Biological Diversity (CBD), the World Intellectual Property Organization, and the International Trade Centre of UNCTAD and the World Trade Organization, to engage the full involvement of indigenous and local communities in CBTF capacity-building projects focusing on TK. The objectives of the CBTF here are to help interested developing countries in:

- raising awareness of the importance of TK for development
- identifying capacity-building needs to harness TK for their trade and development
- examining basic conditions for the possible commercialization of TK (including TK-based innovations)
- examining key concepts relevant for access and benefit sharing and transfer of technology as they relate to TK
- exchanging national experiences

Together with UNCTAD, UNEP looks forward to sharing the results of CBTF activities that aim to promote TK with the international community, and in particular with indigenous peoples and their communities.

## Notes

<sup>1</sup> See [www.unep-unctad.org/cbtf](http://www.unep-unctad.org/cbtf).

## STATEMENT BY THE INTERNATIONAL INDIAN TREATY COUNCIL

**Mario Ibarra**

The IITC was the first Indigenous organization to obtain a consultative statute from the UN Economic and Social Council; thus, these last 26 years we have worked worldwide to obtain the recognition, use, and exercise of the rights of Indigenous peoples.

We congratulate UNCTAD for this initiative and, though it may seem contradictory, we must express that we have problems in understanding some of the expressions considered fundamental for the debates in this meeting. We do not understand what is meant by “traditional knowledge”, “development” and “trade”, as everything seems to indicate that we are starting from diverse philosophical approaches. We believe that the experience acquired by the United Nations in the legal-philosophical debate on the rights of Indigenous peoples can contribute to clarifying and establishing the concepts of the debate.

For my organization, the expression “traditional practices” includes the sciences, techniques, arts, and philosophies that are the collective property of the Indigenous peoples and/or communities. In some cases, the “development” understood and defined by the United Nations as a basic human right has been, for the Indigenous peoples and communities, a modern-day Leviathan, which does not respect lands, gods, animals, sacred sites, plants, or human beings. For us “trade” is an equitable exchange relationship between individuals, communities, or peoples, but we point out that there are aspects of material or immaterial elements of the Indigenous peoples that under no condition – we repeat, under no condition – can be sold or exchanged, and we also ask that this be respected.

In 1981, the United Nations, with the creation of the Indigenous Peoples Working Group of the Sub-Commission on Prevention of Discrimination and Protection of Minorities<sup>1</sup> opened a fertile debate on the rights, both particular and specific, of the Indigenous peoples of the world. The International Labor Organization (ILO), with the adoption of Treaty No. 169 on Indigenous and Tribal Peoples in Independent Countries in 1989, specifies – in a binding instrument – some fundamental aspects for the Indigenous peoples.

At the same time, we believe that this debate must be a comprehensive tributary of the experiences of the United Nations system on “Indigenous issues”. We believe that a reflection of traditional practices, trade, and development cannot be based solely and exclusively on the Convention of Biological Diversity (CBD), and specifically on Article 8(j), as, in spite of its importance, said article only establishes that the “national legislation will respect, preserve, and safeguard the knowledge, innovations, and practices of Indigenous communities” – that is to say, it does not protect the creators or producers or demand that they be respected and acknowledged. We believe that in order to protect the light, one should not only protect the light bulbs; it is also necessary to protect the cables that transport the power and, above all, to protect the source that produces or generates said power. We also believe that the debate should consider both the good and bad experiences to date regarding these issues.

We believe that UNCTAD, as a main organization of the United Nations General Assembly in the trade and development sector, must base part of its legal arguments on Convention 169 of the ILO, because, in spite of the weaknesses of said instrument, it is a comprehensive legal reference of protective importance for the lands, health, work, crafts, individuals, communities, and institutions of the Indigenous peoples. It must also take into account the spirit and letter of Chapter 26 of Agenda 21 of the Earth Summit in Rio de Janeiro.

We believe that a meeting as rich as this one must be more than a simple report that is kept in an archive full of cobwebs. This is why we propose that UNCTAD, based on the elements expressed in this meeting and taking advantage of the experience (regulatory as well as programmatic) of the United Nations related to Indigenous peoples, prepare a “Guide to Traditional Knowledge, Trade and Development” that can be used as a reference tool that can serve to direct discussions, guide negotiations, establish (in relation to these issues) egalitarian and non-discriminatory relationships, and help Indigenous peoples to learn what their rights are.

We believe that the proposed manual will enable UNCTAD to make an invaluable contribution to the International Decade of Indigenous Peoples.

## Notes

- <sup>1</sup> Grupo de Trabajo sobre Poblaciones Indígenas de la Subcomisión de Prevención de Discriminaciones y de Protección de las Minorías



# **PART FOUR**

## **APPENDICES**



## APPENDIX I

### GUIDELINES FOR SUBMISSIONS TO THE EXPERT MEETING<sup>1</sup>

In the notification for this meeting, in order to facilitate a structured exchange of national experiences, experts were invited (but not required) to formulate their inputs according to the questions below. Experts could choose to give special attention to one or more topics which were of most relevance to their national experience and from which lessons could be drawn for the benefit of the other participants. Concrete illustrative examples were encouraged.

#### ***Possible topics to be addressed***

##### *The role of traditional knowledge (TK) in the national economy:*

- the importance and scope of TK, particularly biodiversity-related TK, traditional agriculture and traditional medicine
- estimated economic value of TK in these and other areas

##### *Protection of TK:*

- existing or envisaged systems for the protection of TK
- objectives of these systems
- the role of customary law in protecting TK and regulating its transfer
- experiences and lessons learned regarding the use of existing intellectual property rights instruments for the protection of TK, including patents, plant variety protection, geographical indications, trademarks, trade secrets, etc.
- *sui generis* legislation for the protection of TK
- involvement of traditional communities, including women, in decision and policy-making in this area
- mechanisms to control access to TK and ensure equitable sharing of the benefits derived therefrom
- conditions to ensure that benefits are shared with the original holders of the TK
- documentation of TK in registries, including
- benefits sought
- conditions for access
- legal protection of information in registries (e.g. in national legislation)
- dissemination (e.g. to other communities and to patent offices)
- supportive measures adopted or envisaged by user countries or at the multilateral level

##### *Harnessing TK for development and trade:*

- contribution of TK to sustainable socio-economic development and poverty alleviation
- recognition and encouragement of TK-based innovations and technologies
- commercialization and export of TK-derived products, including
- role/involvement of the original TK-holders
- potential for future commercial expansion
- risks and obstacles, and how to overcome them
- the role of partnerships, including public-private sector and inter-community
- areas for assistance from donor programmes and international organizations
- role of Governments in promoting transfer of technology, including by providing incentives to the private sector

#### **Notes**

<sup>1</sup> These guidelines for the submission of papers by experts were included in the notification for the Expert Meeting (TDO 914(2)) as well as the Annotated Agenda (TD/B/COM.1/EM13/1).



## APPENDIX II

# SYSTEMS AND NATIONAL EXPERIENCES FOR PROTECTING TRADITIONAL KNOWLEDGE, INNOVATIONS AND PRACTICES: BACKGROUND NOTE BY THE UNCTAD SECRETARIAT

(TD/B/COM.1/EM.13/2), AUGUST 2000

### Executive summary

The importance of protecting the knowledge, innovations and practices of indigenous and local communities (TK) is increasingly recognized in international forums. Developing countries seek to ensure that the benefits of cumulative innovation associated with TK accrue to its holders while enhancing their socio-economic development. They also aim at preventing the improper appropriation of TK, with little or no compensation for the custodians of TK and without their prior informed consent.

Building on work carried out in other intergovernmental organizations, this note briefly describes possible instruments for the protection of TK, including traditional/customary law, modern intellectual property rights instruments, *sui generis* systems, and documentation of TK and instruments directly linked to benefit-sharing. In addition to national systems, the protection of TK and equitable sharing of the benefits derived from the use of biodiversity resources and associated TK may also require measures by user countries or cooperation at the multilateral level.

Protection of TK is a necessary but not sufficient requirement for its preservation and further development. To harness TK for development and trade, developing countries need assistance to build national capacities in terms of raising awareness on the importance and potential of TK for development and trade; developing institutional and consultative mechanisms on TK protection and TK-based innovation; and facilitating the identification and marketing of TK-based products and services. There is also a need to promote an exchange of experience among developing countries on national strategies for TK development, *sui generis*

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systems for the protection of TK and the commercialization of TK-based products and services. Special attention should be given to building such capacities in LDCs.

This note provides some analysis and background information to aid experts in their work. The final chapter contains a list of questions proposed for discussion.

## I. Introduction

The protection of knowledge, innovations and practices of indigenous and local communities (hereafter referred to as “traditional knowledge”, TK) has been receiving increasing attention on the international agenda in recent years. This is due to several factors. First, it has been recognized that TK plays a key role in the preservation and sustainable use of biodiversity. This is highlighted in both the Convention on Biological Diversity (CBD) and the International Undertaking on Plant Genetic Resources (IU) of the Food and Agriculture Organization (FAO).

Second, many activities and products based on TK are important sources of income, food, and healthcare for large parts of the populations in many developing countries, including the least developed countries (LDCs). However, TK is being rapidly lost as local ecosystems are degraded and traditional communities are integrated into the wider society.

Third, concerns have been raised about how the benefits derived from the use of biodiversity and associated TK are appropriated and shared. The vast majority of plant genetic resources and other forms of biodiversity are found in – or originate from - developing countries. Access to these resources and the associated TK can provide substantial benefits to companies and scientific research centres in both developed and developing countries. However, there is concern that TK is at times appropriated, adapted and patented by scientists and industry, for the most part from developed countries, with little or no compensation to the custodians of this knowledge and without their prior informed consent.

Fourth, while the need to protect TK and to secure fair and equitable sharing derived from the use of biodiversity and associated TK has been fully recognized, there is no agreement on what would be the most appropriate and effective ways to achieve these objectives. There have been calls for a better understanding of the needs of TK holders and exchanges of information on the effectiveness of existing systems of protection such as customary law, intellectual property rights (IPRs), *sui generis* systems, access and benefit-sharing mechanisms, voluntary measures and documentation.

Fifth, the long term sustainable economic development of many indigenous and local communities may depend on their ability to harness their TK for commercial benefit. Traditional technologies and innovations, which are by their very nature adapted to local needs, can contribute to a viable and environmentally sustainable path to economic development. It is therefore important to encourage TK-based innovations and, if desired by the communities concerned, explore the commercialization of TK-derived products.

From a trade and development perspective, systems for the protection of TK should seek to preserve TK to ensure that the benefits of cumulative innovation accrue to TK holders, while at the same time allowing developing countries to utilize their TK to promote development and trade. This *inter alia* raises the question of responsibilities of both TK holders and users in ensuring equitable sharing of benefits deriving from the use of biodiversity resources and associated TK. It is also important to ensure that the commercialization of TK-based products contributes to the long-term socio-economic viability of indigenous and local communities, as well as the creation of new trading opportunities for developing countries. This could be done, for example, through partnerships or other benefit sharing arrangements aimed at promoting innovation and the production of value-added products, or by seeking to ensure that TK-based products are traded as distinct products, based on their long-term uses and traditional know-how. Similarly, the promotion of innovation and capacity building play important roles in developing country efforts to ensure that their TK contributes to their socio-economic development.

UNCTAD’s member States decided to address the protection of TK as part of UNCTAD’s work in the area of trade and environment. The Plan of Action adopted by UNCTAD’s tenth Conference stated that: “UNCTAD should also, in full cooperation with other relevant organiza-



tions, in particular and where appropriate WIPO and WHO, promote analysis and consensus building with a view to identifying issues that could yield potential benefits to developing countries" (UNCTAD, 2000). It specifies that this work should *inter alia* focus on: "Taking into account the objectives and provisions of the Convention on Biological Diversity and the TRIPS Agreement, studying ways to protect traditional knowledge, innovations and practices of local and indigenous communities and enhance cooperation on research and development on technologies associated with the sustainable use of biological resources" (paragraph 147, third bullet). In preparing this Expert Meeting, the UNCTAD secretariat has been working closely with the secretariats of other intergovernmental organizations, in particular the CBD and the World Intellectual Property Organization (WIPO).

This issues note provides information and analysis aimed at assisting experts in their discussions. Chapter VI contains a list of questions that could be addressed by experts.

## II. The characteristics of traditional knowledge and its role in the global economy

For the purposes of this paper and Meeting, the term "traditional knowledge" will be used to refer to "the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles" as well as "indigenous and traditional technologies" (CBD Art. 8(j) and 18.4).<sup>1</sup> Thus understood, traditional knowledge has certain characteristics. Usually it is held collectively, although certain types of TK may be the purview of specific individuals or subgroups within the community. It tends to be transmitted orally from generation to generation; accordingly, it is usually undocumented. TK is not static, but dynamic, evolving over time as communities respond to new challenges and needs. Indeed, what makes TK 'traditional' "is not its antiquity, but *the way it is acquired and used*. In other words, the social process of learning and sharing knowledge, which is unique to each...[traditional] culture, lies at the very heart of its traditionality." (Four Directions Council, 1996).

Access to and use of TK within and outside communities is generally governed by a wide variety of unwritten customary laws. This seems to be true whether or not notions of ownership and property would be strictly applicable to traditional societies. Indeed many traditional communities express preference for words like stewardship and custodianship, which imply responsibilities as well as rights. Proprietary systems exist in many traditional societies. But any assumption that there is a generic form of customary regulations governing TK use and dissemination ignores the intricacies and diversity of traditional systems. According to the Canadian indigenous peoples organization, the Four Directions Council (1996): "Indigenous peoples possess their own locally-specific systems of jurisprudence with respect to the classification of different types of knowledge, proper procedures for acquiring and sharing knowledge, and the rights and responsibilities which attach to possessing knowledge, all of which are embedded uniquely in each culture and its language."

TK is valuable not only to those who depend upon it for their survival but also to modern industry and agriculture, and to sustainable development more generally. According to the World Health Organization (WHO, 1993), up to 80 per cent of the world's population depends on traditional medicine for its primary health needs. In India, for example, there are 600,000 licensed medical practitioners of classical traditional health systems and over one million traditional community-based health workers (Hafeel and Shankar, 1999). "Possibly two thirds of the world's people could not survive without the foods provided through indigenous knowledge of plants, animals, insects, microbes and farming systems" (Rural Advancement Foundation International, 1994). Over 90 per cent of food in sub-Saharan Africa is produced using customary farming practices (Dakora, 1997). For those comprising the poorest segments of societies, particularly women, indigenous people and rural inhabitants of developing countries, traditional knowledge is indispensable for survival. This is especially true in many LDCs.

A number of TK-derived products are traded internationally. These include handicrafts, medicinal plants, traditional agricultural products, and non-wood forest products (NWFPs). For example, some 150 NWFPs, including rattan, cork, essential oils, forest nuts, and gum

arabic, are traded internationally in significant quantities. The total value of the world NWFP trade is of the order of US\$ 11 billion (FAO, 1995).

Biogenetic resources and their associated TK also provide significant inputs into other markets including pharmaceuticals, cosmetics, agriculture, food additives, industrial enzymes, biopesticides, and personal care (Ten Kate and Laird, 1999). However, the future of bioprospecting is difficult to predict. While enhanced abilities to screen huge quantities of natural products and analyse and manipulate their DNA structures might suggest that bioprospecting will become more popular, it is also possible that advances in biotechnology and new drug discovery approaches based, for example, on combinatorial chemistry and human genomics will in the long term *reduce* industrial interest in natural product research for food, agriculture and health, as well as associated TK.<sup>2</sup> Concerns about food safety and other unknown side effects of DNA-modified products may promote interest in natural product research, especially in organic agricultural products. The recent interest in bio-dynamic agriculture which is based on TK is one such example of agricultural uses of TK.

There have been some attempts to estimate the contribution of TK, particularly biodiversity-related TK, to modern industry and agriculture. For pharmaceuticals, the estimated market value of plant-based medicines sold in OECD countries in 1985 was US\$ 43 billion (Principe, 1989). That many of these would have used TK-leads in their product development is borne out by biochemist Norman Farnsworth's (1988) estimation that of the 119 plant-based compounds used in medicine worldwide, 74 per cent had the same or related uses as the medicinal plants from which they were derived. It is particularly difficult to estimate the contribution of traditional crop varieties (landraces) to the global economy. However, a study on the use and value of landraces for rice breeding in India (Evenson, 1996) estimated that rice landraces acquired from India and overseas contributed 5.6 per cent, or US\$ 75 million, to India's rice yields. Assuming that landraces contribute equally to other countries where rice is cultivated, the global value added to rice yields by use of landraces can be estimated at US \$400 million per year.

Unlike wild biodiversity, the source of plant-based medicines, agricultural biodiversity has developed under farmer selection in farming systems for over 10,000 years by the direct application of TK. Farmers have always swapped crops and landraces widely, and by acclimatizing them to new and very different ecosystems, have created the rich portfolio of agrobiodiversity on which food security depends. It is therefore characteristic of agriculture that countries overwhelmingly depend on agricultural genetic resources that originated elsewhere. This is the basis of the concept of farmers' rights, recognized by the 1989 FAO Conference as arising from the past, present and future contributions of farmers in conserving, improving, and making available plant genetic resources, particularly those in the centres of origin/diversity.<sup>3</sup> Agricultural genetic resources provide the basic material with which both traditional and modern farmers work.

Estimating the full value of TK in monetary terms is difficult if not impossible. First, TK is often an essential component in the development of other products. Second, as many and possibly most TK-derived products never enter modern markets, they are excluded from sectoral or GNP indices. However, if those who depend on TK-derived products were deprived of them, the cost of replacing them through purchases of substitutes in the market would probably be quite high, particularly as a portion of their incomes. And third, a great deal of TK is likely to have cultural or spiritual value that cannot be quantified.

### III. International debate

The international debate on TK covers many issues, such as biodiversity, food and agriculture, health, expressions of folklore, trade and development, and human rights.<sup>4</sup>

The CBD is the only international legal binding instrument that explicitly refers to the protection of TK. Article 8(j) states that: *"(Each contracting Party shall, as far as possible and as appropriate,) Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biodiversity and promote the wider appli-*

*cation with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of benefits arising from the utilization of such knowledge, innovations and practices”.*

The CBD further stipulates that access to genetic resources can only occur on mutually agreed terms (MAT) and with the “prior and informed consent”(PIC) of the Party providing such resources, unless otherwise determined by that Party (Art. 15).<sup>5</sup> Other Articles relevant for TK protection include 10(c), 17.2, 18.4 and 19<sup>6</sup>. The fact that Article 8(j) is subject to national legislation seems to imply that responsibility for its implementation lies with national Governments. However, there has been recent discussion on the role of multilateral mechanisms and the responsibility of user countries to support PIC requirements in provider countries (see section IV).

Article 8(j) is not explicit regarding the means by which national Governments would draw up national legislation to reflect its intent. To address this, the fourth Conference of Parties (COP IV) agreed to establish an Ad hoc Open Ended Inter-sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity. COP V adopted the Working Group’s recommendations for a work plan. In its decision V/16, the COP emphasized the need for case studies to enable a meaningful assessment of the effectiveness of existing legal and other appropriate forms of protection for TK, and invited Parties and Governments to exchange information and share experiences regarding national legislation and other measures for the protection of TK (UNEP, 2000a).

In the FAO, the Commission on Genetic Resources for Food and Agriculture is the forum for negotiations among Governments on the revision of the International Undertaking on Plant Genetic Resources (IU) in harmony with the CBD. The IU is expected to become a legally binding agreement, closely linked both to FAO and the CBD, regulating access and benefit-sharing for plant genetic resources for food and agriculture. Its objectives are the conservation and sustainable use of plant genetic resources for food and agriculture, and the fair and equitable sharing of benefits that arise therefrom. The IU also covers farmers’ rights<sup>7</sup> in recognition of the contribution of farmers and their communities to the preservation and sustainable use of plant genetic resources that are the basis of agriculture and food security. Because of the high level of interdependency between countries with regard to these resources,<sup>8</sup> a Multilateral System for Access and Benefit Sharing<sup>9</sup> is being developed. Benefit-sharing would also be multilateral, and include the transfer of technology, capacity-building, exchange of information, and funding.

The World Health Assembly has adopted a number of resolutions drawing attention to the important role played by traditional medicine in the primary health care of individuals and communities in many developing countries. International trade in herbal medicines is rapidly increasing. However, according to the World Health Organization (WHO), in most countries the herbal medicines market is inadequately regulated. Through its Traditional Medicine Programme, the WHO supports member States *inter alia* in their efforts to formulate national policies on traditional medicine and to study the potential usefulness of traditional medicine, including evaluation of practices and examination of the safety and efficacy of remedies.

Traditional forest-related knowledge (TFRK) is a specific subset of TK covered by the CBD. In addition, trade and development issues related to TFRK have been discussed in the Intergovernmental Panel on Forests and its successor, the International Forum on Forests, and will be an important programme area for the United Nations Forum on Forests. In a broad sense, any actions that protect either indigenous and local communities living in close contact with forests, or the forests on which their traditions depend, could be considered as actions aimed at protecting TFRK. These include, for example, actions relating to traditional resource rights. TFRK can also be included in criteria for sustainable management of forests and certification of forests and forest products.<sup>10</sup>

Discussions on the protection of TK initially centered around “expressions of folklore”. The United Nations Educational, Scientific and Cultural Organization (UNESCO) and WIPO jointly held three expert meetings which led, in 1982, to the adoption of the “Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions”. These provisions have not yet been adopted in full by any country.

WIPO was mandated in its 1998-1999 programme to undertake exploratory groundwork in order to provide an informed analysis of the intellectual property (IP) aspects of TK. In this context, it has been examining the intellectual property needs of holders of TK and genetic resources and the feasibility of TK databases. WIPO held a Roundtable on Intellectual Property and Traditional Knowledge in Geneva in November 1999 and undertook nine fact-finding missions. WIPO and UNEP jointly prepared and submitted to COP V selected case studies on the role of intellectual property rights (IPRs) in the sharing of benefits arising from the use of biological resources and associated TK (UNEP/WIPO, 2000). Elements of the 2000-2001 programme include: case studies on the use of IPR systems to protect TK; a study on customary law governing TK in relation to formal IPR systems; information exchange on IP implications of TK documentation and increased training; and awareness-raising worldwide for TK stakeholders.

In the WTO, the relationship between the CBD and the TRIPS Agreement, including with regard to the protection of TK, has been discussed in both the TRIPS Council and the Committee on Trade and Environment (CTE). The TRIPS Agreement does not explicitly address the protection of TK.<sup>11</sup> Several WTO Members have argued that nothing in the TRIPS Agreement prevents WTO Members from implementing national measures to support CBD objectives, including the protection of TK through *sui generis* systems. However, it has also been argued that national action alone may not be sufficient to achieve benefit-sharing and that some international action is required. In this context, some have suggested that the TRIPS Agreement could include a provision that requires the disclosure, in the process of patent application, of the origin of any relevant biological resources and associated knowledge. In this regard, reference has been made to Article 29 of the TRIPS Agreement.

With regard to UNCTAD, apart from the above-mentioned reference to the protection of TK, the Plan of Action, in paragraph 147, includes several other points of relevance to work in this area. These include transfer of technology issues (second bullet), promotion of trade in environmentally preferable products (fifth bullet), the BIOTRADE Initiative (sixth bullet), and biotechnologies (ninth bullet). Such work is being implemented through UNCTAD's main functions, i.e. intergovernmental work, policy research and technical cooperation for capacity building, and, in accordance with UNCTAD's mission, should focus on strengthening the development dimension. Chapter V of this paper provides a brief summary of UNCTAD's capacity building activities that are relevant for TK.

The Global Knowledge Conference in 1997 emphasized the urgent need to learn, preserve and exchange TK and encourage its role in local and national development. In the context of the Partnership for Information and Communication Technology for Africa (PICTA), the World Bank agreed to lead an Indigenous Knowledge Initiative to stimulate recognition, utilization and exchange of indigenous knowledge in the development process ([www.worldbank.org/afr/ik](http://www.worldbank.org/afr/ik)). Since the beginning of the 1990s, the World Bank also has a revised policy directive on the rights of indigenous peoples to choose the manner and level of participation in development projects. In this context, special procedures are outlined for incorporating indigenous peoples' concern into Bank-funded investment projects through the design of Indigenous Peoples Development Plans.

In 1994, UNDP collaborated with the Indigenous Peoples Biodiversity Network to create the Indigenous Knowledge Programme, which aims at the conservation and promotion of indigenous knowledge. The overall objective of UNDP's work with indigenous peoples is to integrate indigenous perspectives and concepts of development in future programmes and projects, and to make indigenous peoples' concerns a cross-cutting issue within UNDP. To do so, UNDP has prioritized the design of policy and operational guidelines for engagement with indigenous peoples for use of its country offices.

#### **IV. Systems for the protection of traditional knowledge**

As can be seen above, TK has a bearing on debates in several international forums. Nevertheless, no international system has yet been designed and implemented that effectively preserves TK, protects the rights of TK-holders, and compensates them equitably for its use. This chapter sets out a menu of possible options from which Governments could choose.



## **A. Objectives**

When designing systems to protect TK, the objectives must be clear. Some possible objectives of protection schemes could be to:

- preserve and conserve TK
- increase awareness of the value of TK, among both TK-holders and others
- enable communities to continue using TK in the context of their traditional lifestyles
- prevent the unauthorized use of TK
- encourage TK-based innovations
- commercialize certain types of TK
- equitably share the benefits arising from the commercial use of TK
- facilitate access to TK for varying purposes, including research, commercial applications, or use by other traditional communities
- encourage the conservation and sustainable use of biodiversity
- promote social justice and equity
- recognize traditional customary laws and practices
- guarantee the participation of local and indigenous communities in the policy and decision-making processes related to TK
- recognize the important role of women as holders of TK and ensuring their participation in decision- and policy-making processes

There are different approaches to building systems to protect TK. One approach is to examine to what extent modern IPR regimes as specified in the TRIPS Agreement can be used or complemented to protect TK and promote the CBD objectives (particularly benefit-sharing), or how *sui generis* ("of its own kind") systems can be designed to take account of the specific characteristics of TK where existing IPR regimes are not suitable. Another approach is to strengthen and further develop existing TK protection systems, based on documentation of TK, building institutions, developing networks and strengthening the use of customary law. Both approaches can be used. In fact, any country designing a TK protection system can choose from a menu of options to create a combination of elements that will best meet its specific needs. These include:

- Strengthening customary law
- IPR protection, including existing IPR instruments
- *Sui generis* systems
- Prior informed consent and access and benefit-sharing mechanisms
- Documentation of TK
- Other measures to strengthen and develop TK protection systems.

## **B. Strengthening customary law**

Securing the protection of TK according to the *existing* regulations requires, above all, respecting and, where necessary, strengthening the relevant customary law. This is easiest to achieve in countries where customary law systems can operate with relative freedom. In such cases, the possibility arises for traditional rules and norms to be asserted with as much legal effect within that country as patent rights, trademarks and copyrights. But whether customary laws regulating cultural and intellectual property are fully incorporated into national legal systems, are enforceable in local courts alone, or are just given some minimal recognition at the state level, the common assumption that traditional knowledge is by definition part of the public domain becomes much more open to challenge than if customary law has no recognition at all. All too often TK is misappropriated *because* it is conveniently assumed that since it has been publicly disclosed, communities have given up all claims over it. In fact, it is possible that the acts of disclosure and subsequent commercial use contravened customary law. Before considering the applicability of conventional IPRs or *sui generis* systems, consideration should be given to enhancing the status of the established laws of the TK-holding communities.

## **C. Existing intellectual property rights instruments**

This section examines to what extent some IPR instruments could be used or adapted to meet certain TK protection needs. This subject is controversial. The TRIPS Agreement covers sev-

eral areas of IPRs that could be relevant to this issue, including the protection of inventions through patents and plant variety protection, copyright, trademarks, geographical indications, and trade secrets. Before going further, it is worth bearing in mind two important points. First, these IPRs were never designed with the intent of protecting TK, and thus do not easily accommodate the (usually) collective nature of TK generation and ownership. Second, discussion of this matter is difficult to separate from related issues such as the extent to which expanded IPRs can encroach on the public domain, incentivize the privatization of public goods, and encourage misappropriation of knowledge belonging to people who are in a weak position both to avail themselves of IPR protection and to contest the illegitimate IPR claims of others.

**Patents:** Patents are the subject of considerable debate in connection with TK. Patents protect inventions which, through an examination, are considered to be new, to involve an inventive step, and be capable of industrial application. Currently, some 97 per cent of patents in the world are held in industrial countries (UNDP, 1999). While individual TK holders could in theory acquire a patent, it is generally the case that TK is passed on orally from generation to generation and evolves incrementally. Thus, it would be difficult to meet the criteria of novelty and inventive step. Second, TK tends to be generated collectively to the extent that no inventors are identifiable. Indeed, the source of much TK cannot be traced to a specific community or even to a geographical region. Even if these obstacles were somehow overcome, most traditional communities do not have the resources to file patent applications or to take legal action to prevent patent infringement.

It has been suggested that TK holders could take advantage of utility model (petty patent) systems that are less expensive to use and have less exacting inventive step requirements. Kenya's *Industrial Property Act 1989* allows utility models for traditional medicinal knowledge in the form of "herbal as well as nutritional formulations which give new effects". Another possibility is to adapt IPR systems to include new forms of ownership such as communitarian titles. (Cottier, 1997)

For many traditional communities, patents are viewed primarily as a source of concern rather than an opportunity. There are several cases where TK has been used by others to develop a product that is then patented, with neither prior informed consent of the TK holders nor benefit sharing. In this context, concerns have been raised that some national patent laws define novelty in a territorially limited sense so that an 'invention' can be 'novel' even if it exists in an undocumented form in another country.

A possible means to help ameliorate this concern is through certificates of origin, according to which patent applications for inventions based on genetic resources would include a certificate of origin of the genetic resources and associated TK used and evidence that PIC had been obtained from the country and/or indigenous or local community concerned. Putting this in place at the national level should be fairly straightforward. Some have suggested an international certification system, where countries providing genetic resources and/or TK would issue standard certificates indicating that all obligations had been fulfilled in accordance with their national laws. (Tobin and Ruiz, 1996). This has been proposed by several countries at the CTE. In the negotiations leading to the recent adoption of the Patent Law Treaty, some developing countries suggested the inclusion of provisions in the treaty aimed at preventing the granting of patents involving unauthorized use of TK, for example through compulsory disclosure of the source of TK and/or PIC.<sup>12</sup> Another, complementary approach to address the concern about patents being granted improperly (e.g. an invention that is not new being awarded a patent due to inadequate information) is to develop a database of TK that can be used in national patent offices during the patent examination process. Indeed, in the WIPO Standing Committee on Information Technologies, such a proposal was made by India and accepted by that Committee.<sup>13</sup> This is also relevant to the issue of documentation of TK discussed below.

**Geographical Indications:** Under Article 22.1 of the TRIPS Agreement, geographical indications "identify a good as originating in the territory of a [WTO] member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographic origin." Like trademarks, they allow producers to differentiate themselves and segment the market, thus achieving higher returns, if consumers are willing to pay a price premium for their distinct product.



Geographical indications have certain characteristics that are more in line with the ways in which traditional communities use their knowledge. As pointed out by Downes and Laird (1999a), geographical indications are based on collective traditions and a collective decision-making process; protect and reward traditions while allowing evolution; emphasize the relationships between culture, land, resources and environment; are not freely transferable from one owner to another; are not subject to unconditional control by a private owner; and can be maintained as long as the collective tradition is maintained. Some developing countries are interested in exploring the use of geographical indications for TK-based products such as kava from the South Pacific.

**Trademarks:** Like geographical indications, trademarks are marketing tools based on claims to distinctive or authentic products, and are indefinitely renewable. Collective marks or certification marks, which are usually owned by associations of producers, could be used to protect goods based on TK. Certification marks indicate that certain claimed characteristics of the goods (e.g. origin, quality, production method) have been authenticated by the producer organization owning the mark. In the United States, the Intertribal Agriculture Council licenses use of its annually-renewable 'Made by American Indians' mark for the promotion of agricultural or other Indian-made products that have been produced and/or processed by enrolled members of recognized Tribes." (Dutfield, 2000). The "Ayurveda" trademark has been used extensively by India for marketing ayurvedic products, especially medicines and foods.

**Trade secrets:** The protection of undisclosed information (trade secrets) is covered by TRIPS Art. 39. Trade secrets could potentially be used to protect a fair amount of TK with commercial value. To do so, the community would have to comply with the condition that the information "has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret" (TRIPS Art. 39 (c)). If an individual such as a shaman or a small group of individuals (e.g. a family) has exclusive access to information, that individual, group, or the whole community would probably have a trade secret. (Axt, *et al*, 1993) This system is widely used in Chinese traditional medicine.

**Copyright:** Although folklore is not dealt with explicitly in this paper, it should be mentioned that copyrights seem to have some potential for its protection. The usual problems of attributing ownership and protecting information already in the public domain exist here as well. The 1976 *Tunis Model Law on Copyright in Developing Countries*, adopted by a committee of governmental experts with the support of UNESCO and WIPO, specifically addressed these difficulties and may be worth reconsidering.

#### **D. Sui generis systems**

Many interested parties, particularly in developing countries, are calling for the development of *sui generis* systems to protect TK (please note that this is not to be confused with the *sui generis* system for the protection of plant varieties referred to in Article 27.3(b) of the TRIPS Agreement<sup>14</sup>). As discussed in chapter III, CBD's COP V recognized the potential importance of such systems and called for an exchange of experiences.

Most discussions of *sui generis* systems for the protection of TK focus on the national level and on IPRs. *Sui generis* legislation to protect TK can comprise or be developed in conjunction with regulations governing access to genetic resources and benefit-sharing, as well as institutional and regulatory mechanisms and other measures such as registries of TK. To accommodate such a system, it is likely that other laws and policies governing natural resources, protected areas, environmental protection, intellectual property and land tenure would need to be reviewed (UNEP, 2000b). It is of paramount importance that traditional communities participate in the development of any such system, and that their cosmovisions, customary laws, and priorities are respected and taken into account. To oversee implementation and ensure enforcement of provisions, institutional measures such as setting up a multi-stakeholder coordinating body might be considered.

### 1. Possible elements of *sui generis* systems

In October 1999, the CBD's Panel of Experts on Access and Benefit-sharing met and suggested possible elements for *sui generis* legislation to protect TK. Regarding rights, the Panel suggested that legislation could include recognition: of ancestral community rights over TK; that these rights exist even when information is already in the public domain; that these rights may be collective in nature; of the distinction between rights over genetic resources (where vested in the State) and rights over knowledge associated with such resources (vested in local and indigenous custodians); and that the use of genetic resources implies use of associated TK. The Panel also suggested that legislation could include the creation of administrative and judicial review processes to resolve disputes; benefit-sharing mechanisms; registers of TK; and programmes and processes for the strengthening of TK systems.

### 2. Examples of *sui generis* systems

Some countries have introduced legislation which seeks *inter alia* to protect the rights of TK holders. Examples include the Andean Community member States, Brazil, Costa Rica, Panama and the Philippines (recently Thailand has developed legislation in the area of community rights related to TK in three areas: medicine, forestry and food - plant varieties). The Peruvian Government is drafting legislation specifically on TK protection ("Proposal of Regime of Protection of the Collective Knowledge of Indigenous Peoples") with the active participation of traditional communities and their representative organizations. According to the draft law, those wishing to access TK for scientific, commercial, or industrial applications are required to secure the PIC of the holders of the knowledge. A register of collective knowledge will be created, with access requiring the written consent of the indigenous peoples who own the specific knowledge. In order to find out whether the register contains knowledge that may be of interest, the competent national authority administering the register will provide interested parties with information on the uses that certain indigenous peoples have for biological resources.

The Organization of African Unity (OAU) has drafted "African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources" (see Appendix III). It determines that any written contract shall be entered into by the state and the collector, but with the full participation and approval of the concerned local community or communities. It further suggests an institutional arrangement for developing a system of registration of items protected by community intellectual rights and farmers' rights according to their customary practices and law. Other provisions pertain to the development of a national information system to compile and document information on local knowledge and innovation practices of the communities and guidelines for collectors of resources (OAU, 1998).

A model Community Intellectual Rights Act proposed by the Third World Network in 1996 aims to protect the innovation and intellectual knowledge of local communities. It declares that "the local community shall at all times and in perpetuity be the lawful and sole custodians and stewards of all innovation". In view of its definition of innovation<sup>15</sup>, the Act basically declares that all innovations derived in any degree from community knowledge are innovations of that community and owned in perpetuity (Nijar, 1996).

It is been suggested that the UNESCO/WIPO 'Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Prejudicial Actions' could be extended beyond folklore to encompass other types of TK. In these Provisions, protection is not limited in time and is subject to authorization if use of traditional heritage is made both with gainful intent and outside traditional or customary context.

### E. Access and benefit-sharing mechanisms

**Prior informed consent:** PIC represents the CBD's key mechanism for providing legal protection of TK and benefit sharing. However, much will depend on national and sub-national legislative definitions of what constitutes PIC, as well as the mechanism for enforcing it. Where PIC is given, mutually agreed terms (MAT) and benefit-sharing arrangements become a part of the contractual arrangement between the local community and the researcher/collector

(Fourmile-Marrie, 1998). PIC could provide a link between traditional or customary systems of TK protection and modern IPR instruments.

In principle, the Convention refers only to the PIC of the State in possession of the genetic resources to which access is sought. Access legislation in the Philippines, Costa Rica and the Andean Community requires that PIC is also obtained from local and indigenous communities. For this to function properly, the rights of traditional communities to their TK should be recognized in national legislation.

The CBD Panel of Experts on Access and Benefit-sharing recognized that it might be necessary to explore possible measures to support, in user countries, PIC requirements in provider countries (UNEP, 1999). This has been reflected in CBD Decision V/26.<sup>16</sup> Since the Panel was unable to come to any conclusions on the issue of IPRs, COP V requested the CBD secretariat to prepare a report on issues identified as requiring further study.<sup>17</sup> The Panel recognized that IPR application procedures could require that the applicant submit evidence of PIC, but that the effectiveness of such measures should be further evaluated.<sup>18</sup>

**National legislation:** Some 50 countries are currently in the process of writing access and benefit-sharing legislation. This includes the Andean Community member States, Brazil, Costa Rica, India, Panama, the Philippines, and Thailand. It is important that any legislation developed should be flexible and not unduly complicated so as to keep transaction costs reasonably low. Also, it should be borne in mind that the special characteristics of agricultural biodiversity may necessitate multilateral benefit-sharing arrangements, rather than bilateral arrangements.

**Contractual agreements:** Apart from legislative protection for TK, contractual arrangements have been used for exchanges of biological resources and associated TK between TK holders and companies. One example is the know-how license agreement between the Aguaruna of Peru and the United States pharmaceutical company Searle (Tobin, 1997). The contract option has some limitations. These include the disparity in bargaining power of the parties, the high transaction costs, the secrecy of contracts, and the fact that such agreements are generally not binding on third parties. Some countries are in the process of formulating standard form contracts to reduce transaction costs.

**Guidelines and codes of conduct:** A number of guidelines for access and benefit sharing have been developed, primarily by members of associations that seek access to genetic resources. One example is the International Society on Ethnobiology's Code of Ethics.<sup>19</sup> The Government of Switzerland undertook a broad consultative process on this subject with relevant industries and other stakeholders in its country and drew up a set of draft voluntary guidelines that it presented to COP V of the CBD (UNEP, 2000).

## **F. Documentation of traditional knowledge**

Documentation of TK, innovations, technologies, and practices in ordered collections or databases, generally called registers or registries, can contribute to preserving and protecting that knowledge.

In India there are several interesting initiatives. Several NGO-driven People's Biodiversity Registers (PBRs) document TK at the village level across the country. These aim to record TK for the benefit of present and future generations of local communities, to promote its continued use through recognition of its value and inter-community exchanges, and to protect it from misappropriation. A bottom-up approach is envisaged, aimed in the long term at creating a network of decentralized databases giving full credit to the provider of the information, be it an individual or a community (WTO, 2000).<sup>20</sup> The Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) aims to strengthen the capacity of grassroots innovators by documenting and disseminating technological and institutional grassroots innovations, protecting IPRs of innovators, and providing them with financial support (Gupta, 1999). As of November 1999, SRISTI had surveyed some 4,500 villages and documented 10,300 innovations related to agriculture, farm implements, herbal medicine, and soil conservation (Varma, 1999).

Registries can be an important tool to preserve TK for the use of local communities and the rest of the world. This is especially important because so much is being lost as elder generations pass on. Although entering knowledge in such a database would not necessarily establish a legal claim for most types of TK, such documentation can help to demonstrate the existence of prior art in the case of patent claims based upon TK. Consideration needs to be given to levels of accessibility to registries, since making TK more readily available could facilitate its being used without proper acknowledgement or compensation. Even with user access agreements, enforcing conditions is likely to present a practical challenge (Downes and Laird, 1999b).

## **V. Harnessing TK for development and trade**

Legal protection of TK is a necessary but not sufficient requirement for its preservation and further development. According to the World Bank, TK is an underutilized resource in the development process. Its dissemination can help to reduce poverty ([www.worldbank.org/afr.ik](http://www.worldbank.org/afr.ik)). Adequate protection needs to be supplemented by measures to (i) raise awareness of the importance of TK and its preservation; (ii) further develop TK-based innovation; and (iii) exploit the opportunities for commercialization of TK-based products and services. This can best be achieved on the basis of comprehensive national strategies to harness TK for development and trade, reflecting the national development objectives and interests of indigenous and local communities. Besides the promotion of the use of adequate instruments of TK protection, such national strategies may comprise institutional mechanisms (both at intra-ministerial level and consultative mechanisms with non-governmental stakeholders) and a set of policy instruments and incentive measures to promote TK-based innovation and commercialization of TK-based products and services.

In this regard, the notion of a national system of TK-based innovation can be important. This refers to a network of economic agents and government institutions, based on supportive policies, that influence the innovative behaviour and performance of traditional and local communities in a forward-looking and coherent way. Even if single elements of such systems are strong, the system as a whole may be weak. The capability to learn and build new competencies will depend on how well the parts fit together and on the strength of these connections. The focus on innovation as a process wherein individuals and organizations take new initiatives is useful also because it brings entrepreneurship to the forefront. Without a general climate promoting individual and collective entrepreneurship, the strengthening of the knowledge base might not have any major positive impact (Nelson, *et al*, 1993). However, it must be recognized that, for efforts to integrate TK into national systems of innovation to succeed, they must reflect the reality that a great deal of TK is tacit, that is to say uncodified and, in many cases, inherently uncodifiable (Mytelka and Tesfachew, 1998). Accordingly, partnerships involving the TK holders themselves are essential in order that traditional know-how can be transferred and made useable. Principles of equity, prior informed consent and transparency should of course be integral to such partnerships. The tacit nature of a great deal of TK also makes the need for documentation of TK an urgent and pertinent issue.

### **A. Promoting innovation and commercialization of traditional knowledge**

Strengthening the innovative capacity of indigenous and local communities to further develop TK in a range of natural product-based industries can support their long-term sustainable economic development and help to protect their TK. Central and local governments can enhance innovation by creating special supportive mechanisms or facilitating the exchange of experience and skills among indigenous and local communities. The Government of India, for instance, has set up a national innovation foundation with initial funding of US\$ 5 million. This is intended to build national registers, mobilize IPRs for innovations based on these registers, set up incubators for converting innovations into viable business opportunities, and help in the dissemination of this information across different regions of the country.

Commercialization of TK-based products and services may provide opportunities, but it should be recognized that certain indigenous communities prefer to focus on cultural and spiritual values (Posey, 1999). It should also be noted that there are limitations for the commer-



### Box 1: Examples of commercialisation of TK-based products and services

*Art and handicrafts:* Indigenous artworks as tourist souvenirs are usually made by indigenous artists and crafts-people. However, traditional artworks are sometimes mass-produced for tourists as generic traditional works and sold through the souvenir trade. Usually this does not breach copyright because no specific artworks are copied. In such cases, certificates of authenticity guaranteeing that the item is in fact made by a traditional artist may be needed. In addition, fine art produced by traditional community artists specifically for art collectors and the investment market can generate significant revenues.<sup>1</sup>

*Traditional medicines:* Part of the US\$ 60 billion world market for herbal medicines is based on TK. This may provide trading opportunities for developing countries, but taking advantage of such opportunities may require appropriate legislation, quality control and marketing as well as further study of suitable intellectual property protection. India, for example, currently exports more medicinal plants than herbal products, due to difficulties in getting formulations cleared by the United States Food and Drug Administration (FDA) and non-acceptance by medical insurance companies (particularly in Europe). However, the situation is changing and India is entering world markets for herbal products in a significant way. India's exports of medicinal plants and herbal products are about US\$ 8 million annually, but growing quickly. Maharishi Ayurveda Products is planning to enter the roughly US\$ 4 billion Japanese market with a portfolio of 120 ayurvedic products. This will include food supplements, aromatic oils, cosmetics and body care products.

*Native species:* Some countries are promoting the sustainable exploitation of native species. Indigenous peoples across Australia use some 10,000 native plant species for food. However, only a fraction is being exploited, largely by non-indigenous enterprises, in the still nascent but rapidly growing native bushfood industry.<sup>2</sup> The principal value of these various bushfoods is as ingredients (flavours, spices, condiments) in the preparation of other foods. The industry's real potential, based on the 'organic-ness' of its products, lies in overseas markets. The industry is starting to cultivate many popular food plants to reduce reliance on wild sources, providing opportunities for greater quality control, more reliable supplies, improved access to markets, selection of best strains and development of new varieties (Fourmile-Marrie). The potential for participation of local communities is large but needs encouragement. Indigenous communities may need to examine appropriate forms of intellectual property protection to capitalize on their TK in the market place without jeopardizing the very values that sustain it.<sup>3</sup>

*TK-related resource-based products:* A collaboration established in 1994 between POEMA and Daimler Benz of Brazil includes research in natural products (such as fibres, dyes, oils, latex, and resins) for the automobile industry, as well as the establishment of a pilot plant for the manufacture of truck headrests from coconut fibre (previously burned as waste) and latex. The pilot plant, administered by the Association of Rural Producers of Ponta de Pendas, Marajo Island, has been able to increase its production capacity from approximately 1,000 units per month to 4,000. This was achieved with the technical assistance and know-how of POEMA/Daimler Benz and funds from Bank of Amazonia SA. The association maintains direct relationships with its clients in São Paulo and continues to study ways of increasing and diversifying its production line.<sup>4</sup> UNCTAD BIOTRADE and POEMA have created the Programme Bolsa Amazonia to foster and replicate these types of partnerships in the Amazonian region.<sup>5</sup>

<sup>1</sup> For example, recent auction sales in Melbourne (February 1999) realized about A\$ 4.4 million. The total value of the Aboriginal art market in Australia is around A\$ 200 million per year. Half the sales are related to the tourism market. Of the total Aboriginal art trade, about A\$ 50 million is estimated to go directly to Aboriginal producers.

<sup>2</sup> The Australian Native Bushfood Industry Committee (ANBIC) has been established with a grant from the Rural Industries Research and Development Corporation. In the early 1990s, the bush food industry was worth an estimated \$15 million per year, with ANBIC hoping to accelerate its growth to \$100 million within three years. Few Aboriginal peoples/communities are currently participating in this industry (Fourmile-Marrie, 1995).

<sup>3</sup> Aboriginal communities might find that plant breeders rights (PBRs) have already been taken out on many traditional species by both local and overseas companies. This means that they may only be able to grow certain species under license (Fourmile-Marrie, 1999).

<sup>4</sup> The EU Directive for the Processing of End-of-Life-Vehicles is likely to encourage further developments in this regard.

<sup>5</sup> For more information, see: [www.ufpa.br/poema](http://www.ufpa.br/poema)

cialization of TK. In certain cases there is potential for over-harvesting of economically significant natural products, such as Pacific Yew.<sup>21</sup> In others, sustainable harvesting of a plant on which a TK-based product is derived is feasible, but may be blocked due to a preservationist conservation policy that does not allow *any* kind of harvesting. A good example is the jeevani herbal product based upon the TK of the Kani people of South India (Anuradha, 1998). Commercialization of TK may *inter alia* require appropriate systems of intellectual property protection that take into account the need to enhance the value of TK-based products (for example through brand names or geographical indications), but without adversely affecting traditional values. Communities that are interested in exploring possibilities of commercially exploiting their TK should first assess what aspects of their TK could be of interest to the wider world. They should then decide whether certain categories should be considered as “off-limits” for commercialization due *inter alia* to religious, cultural, spiritual or environmental sustainability considerations. Thereafter, they can develop a plan of action or a commercial roadmap (Lettington, 2000).

Since local and indigenous communities tend to be relatively small, they cannot usually on their own generate the economies of scale necessary in particular for entering the international trade arena. Thus partnerships become very important. These could take several forms. For example, local and indigenous communities could form a producers’ association for one type or a defined range of products. Also, an association of communities organized in this manner could potentially make use of trademarks or geographical indications to differentiate their products from others in the market. The Native American Indians in the United States have done this, for example (see paragraph 41).

Interest in the commercialization of TK-based products and services is on the rise because of commercial interest in biodegradable products and other shifts in consumer behaviour in developed and developing countries. Experts may discuss examples along the lines of those provided in box 1.

## **B. Capacity-building**

Capacity-building can help indigenous and local communities in harnessing TK for development and trade. Discussions within the CBD and recent seminars<sup>22</sup> suggest that the following focus could be given to capacity-building activities: (a) awareness-building on the importance and potential of TK for development and trade; (b) assistance in developing institutional and consultative mechanisms to harness TK for development and trade; (c) facilitation of the identification and marketing of TK-based products and services; (d) promotion of exchange of experiences among developing countries on national strategies, *sui generis* systems for the protection of TK, and the commercialization of TK-based products and services; and (e) special attention to building such capacities in LDCs.

In accordance with its mandate, UNCTAD is implementing capacity building projects to promote sustainable development through trade. These activities fall into two clusters: (a) the building of institutional and policy-making capacity for harnessing TK for development and trade, including assistance on equitable sharing of TK-derived benefits; and (b) the identification of and promotion of exports of TK-based goods and services.

The BIOTRADE Initiative of UNCTAD seeks to enhance the capability of developing countries to produce value-added products and services from biodiversity for both domestic and international markets.<sup>23</sup> Country programmes are being developed in the Amazonian and Andean regions under the project “Implementation of the BIOTRADE Initiative of UNCTAD in the Amazonian Region”.<sup>24</sup> These programmes seek to identify opportunities and constraints for sustainable development of biodiversity resources in each beneficiary country, focusing on bio-business development, bio-partnerships, incentives for conservation, sustainable use, and benefit-sharing. A subregional programme on TK, IPRs and benefit sharing, as they relate to trade and biodiversity, is under way in the Andean region in cooperation with the Andean Community (CAN), the Corporación Andina de Fomento (CAF), the International Centre on Trade and Sustainable Development (ICTSD) and the BIOTRADE counterparts in the beneficiary countries.



The UNEP-UNCTAD Capacity Building Task Force on Trade, Environment and Development seeks to contribute to the promotion of production and trading opportunities for environmentally preferable products, including organic and TK-based products from developing countries, *inter alia* based on the forging of proactive inter-community, public-private and business partnerships.<sup>25</sup> An UNCTAD/UNDP project in India explores how to add value to TK through partnerships with the private sector and how to commercialize such technologies. Incentives and experiences for developing such partnerships are being examined. An UNCTAD/UNDP project in Viet Nam examines the role of partnerships, including benefit sharing arrangements (at the national level) between scientific research institutes/universities and farmers, to support TK-based innovations.

As part of its capacity building work, UNCTAD is also promoting the exchange of national experiences among developing countries. Under the project "Strengthening Research and Policy Capacities in Trade and Environment in Developing Countries", 10 developing countries have identified several priority issues for examination, including national experiences with (a) *sui generis* systems for the protection of TK and (b) benefit sharing.<sup>26</sup> These issues have been discussed in seminars that were based on a series of country-focused papers. Studies have also been produced under the BIOTRADE Initiative, for example on codes of conduct, registers of TK, and geographical indications.<sup>27</sup>

## VI. Possible issues for discussion by experts

The questions below are intended to stimulate the discussion of experts. In addition, country-focused papers by experts will elaborate on questions outlined in document TD/B/COM.1/EM.13/1.

### A. Systems for the protection of TK and benefit sharing (chapter IV)

Experts may wish to address the following questions:

- What is the economic value of TK?
- What should be the objectives for protecting TK?
- What systems are available to achieve different objectives? For example, what are the lessons learnt regarding the use of customary law, existing IPR instruments, *sui generis* systems, prior informed consent, benefit sharing mechanisms, documentation, etc.?
- How can national systems for the protection of TK and instruments such as PIC be supported by policies and measures implemented by user countries or at the multilateral level?
- What rules are in place to regulate access to TK held in registries?
- To what extent have benefit sharing arrangements been successful? What are the conditions for effective benefit sharing arrangements?

### B. Harnessing TK for development and trade (chapters II and V)

Experts may wish to elaborate on the following issues:

- How can TK and TK-based innovation contribute to sustainable socio-economic development in developing countries?
- What experiences have developed and developing countries had in promoting the innovative capacity of indigenous and local communities? What policies and mechanisms have been used in this regard?
- What are the experiences of developing countries and donor programmes in promoting trade in TK-based products? How do these programmes relate to programmes for environmentally preferable and fairtrade products? What is the role of modern IPR instruments in promoting trade in TK-based products from developing countries?
- What is the role of product certification and labeling?
- How can developing countries obtain greater benefits from the commercialization of TK-based products? What would be the role of inter-community, public-private, and business partnerships?

### C. Capacity-building needs (chapter V)

Experts may wish to focus on the following questions:

- What are the capacity-building needs of developing countries in their efforts to:
  - protect TK;
  - promote TK-based innovations;
  - harness TK for development and trade;
  - promote trade in environmentally preferable and TK-based products?
- Building on paragraphs 68–70, how can UNCTAD, within its existing mandate and in co-operation with other organizations, assist developing countries in this regard? What are the specific needs of developing countries, in particular LDCs, for such capacity-building activities, in particular with regard to research and analysis; facilitating exchange of experience among developing countries; and training?

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## Notes

- <sup>1</sup> Use of the word "innovations" in the CBD indicates that TK can be just as novel and inventive as any other kind of 'non-traditional' knowledge. The word "practices", on the other hand, suggests techniques and procedures that may be longer-established but are no less worthy of protection. Use of the word "technologies" again implies that IPR protection may be applicable and that the transfer of such technologies to others should be on mutually agreed terms as with any other technologies that may have wider application.
- <sup>2</sup> According to Tanya O'Connor, IPR issues, large capital needs, a lengthy approval process and the lucrative prospects for bioengineering have all contributed to the drug companies' exodus from the forest, despite the huge contributions plant-based remedies have made to modern medicine over the last three decades. Because of the lengthy approval process, some of the plant-based remedies, under the name of Shaman Botanicals, are now being marketed as dietary supplements. O'Connor, T. (2000).
- <sup>3</sup> This was for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions, in order to ensure that the need for conservation is globally recognized and that sufficient funds for these purposes are available; to assist farmers and farming communities, in all regions of the world, but especially in the areas of origin/diversity of plant genetic resources, in the protection and conservation of their plant genetic resources, and of the natural biosphere; and to allow farmers, their communities, and countries in all regions, to participate fully in the benefits derived, at present and in the future, from the improved use of plant genetic resources, through plant breeding and other scientific methods.
- <sup>4</sup> The International Labour Organization (ILO) Convention 169 Concerning Indigenous and Tribal Peoples in Independent Countries says that Governments have responsibility to develop measures



- for the full realization of these peoples' social, economic and cultural rights. Under the United Nations Economic and Social Council's Commission on Human Rights, a Working Group on Indigenous Populations has prepared a Draft Declaration on the Rights of Indigenous Peoples, which awaits adoption by the United Nations General Assembly.
- <sup>5</sup> This does not apply to seed in gene banks collected prior to the date when the CBD came into effect. Such *ex situ* collections are dealt with in the International Undertaking.
  - <sup>6</sup> Article 10(c) calls upon Parties to protect and encourage customary use of biological resources in accordance with traditional cultural practices. Article 17.2 addresses scientific and technical information exchange with specific reference to indigenous and traditional knowledge. Article 18.4 states that Parties shall encourage and develop methods of cooperation for the development and use of technologies, including indigenous and traditional technologies, pursuant to the objectives of the Convention. Article 19 addresses the distribution of benefits arising from biotechnologies.
  - <sup>7</sup> A proposed Article on Farmers' Rights was agreed without brackets. The responsibility for realizing farmers' rights rests with national Governments. In accordance with their needs and priorities, national Governments should take measures to protect and promote farmers' rights, including: (a) protection of TK relevant to plant genetic resources for food and agriculture; (b) the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture; (c) and the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture. It would also be recognized that nothing in the Article "shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed and propagating material, subject to national law" (Article 15 of the Composite Negotiating Text).
  - <sup>8</sup> The wide and frequent exchange of genetic resources within agriculture is what differentiates it from the use of wild genetic resources, which are often limited to narrow niches and geographical reaches. Thus for plant breeding, solutions developed for biochemical bioprospecting would not be appropriate. (Stannard, 2000).
  - <sup>9</sup> The Multilateral System will cover a list of crops established on the basis of the criteria of food security and interdependence, and the collections of the International Agricultural Research Centres. Plant genetic resources in the Multilateral System may be used in research, breeding and training, for food and agriculture only. For other uses, mutually agreed arrangements under the CBD will apply. The Undertaking will be in accordance with applicable property regimes.
  - <sup>10</sup> For example, the forest certification scheme of the Forest Stewardship Council, under "Principles and Criteria" for certification include a "Principle on Indigenous Peoples' Rights" which incorporates a concept of "free and informed consent", as follows: *1.4. Indigenous peoples shall be compensated for the application of their traditional knowledge regarding the use of forest species or management systems in forest operations. This compensation shall be formally agreed upon with their free and informed consent before forest operations.*
  - <sup>11</sup> In preparation for the Seattle Ministerial Conference (December 1999), some developing countries proposed to incorporate TK in the TRIPS Agreement. Proposals included the following: to establish within the TRIPS Agreement a system for the protection of intellectual property, with an ethical and economic content, applicable to the TK of local and indigenous communities, together with recognition of the need to define the rights of collective holders; to include a new Article specifying the rights of indigenous peoples and local communities in Part I ("General provisions and basic principles") of the Agreement; and to carry out studies and, on the basis of these recommendations, initiate negotiations with a view to establishing a multilateral legal framework that will grant effective protection to the expressions and manifestations of TK
  - <sup>12</sup> Statements made at the WIPO meeting on Intellectual Property and Genetic Resources, Geneva, 17-18 April 2000.
  - <sup>13</sup> WIPO document SCIT/5/10, 14 July 2000, paragraph 40 (The International Bureau [of WIPO] agreed to the proposal and announced that a preliminary evaluation of the CD-ROM provided by the Delegation [of India] indicated that a basic prototype system could be made available in two or three weeks...).
  - <sup>14</sup> This requires that all Members of the WTO provide intellectual property protection for plant varieties by patents, an effective *sui generis* system, or a combination of the two. Protection of plant varieties may have implications for indigenous and local communities. It has been argued that when deciding how to provide such protection for plant varieties, countries should bear in mind the specific characteristics of their agricultural economy and their development needs. Some observers would urge communities to protect their traditional varieties quickly, before others do so.
  - <sup>15</sup> 'Innovation' shall include any collective and cumulative knowledge or technology of the use, properties, values and processes of any biological material or any part thereof rendered of any, or enhanced use or value as a result of the said cumulative knowledge or technology whether documented, recorded, oral, written or howsoever otherwise existing.

- <sup>16</sup> Decision V/26, in paragraph 4(c), urged recipient countries to support efforts made by provider countries to ensure that access to their genetic resources and associated TK is subject to Articles 15, 16 and 19 of the Convention.
- <sup>17</sup> Issues include, for example: how to define relevant terms including subject matter of TK and scope of existing rights; determining whether existing IPR regimes can be used to protect TK and options for the development of *sui generis* protection of TK rights.
- <sup>18</sup> COP V invited relevant international organizations, including WIPO, to analyse issues of IPRs, “including the provision of information on the origin of genetic resources, if known, when submitting applications for intellectual property rights, including patents.”
- <sup>19</sup> For more information, see: [www.guallart.dac.uga.edu/ISE/SocHis.html](http://www.guallart.dac.uga.edu/ISE/SocHis.html).
- <sup>20</sup> “Protection of Biodiversity and Traditional Knowledge – Indian Experience”, Indian submission to CTE, WT/CTE/W/156 – IT/C/W/198), 14 July 2000.
- <sup>21</sup> The bark of the Pacific Yew was found to provide a compound now extensively used in the treatment of ovarian cancer. This led to harvesting at an unsustainable level, and the Pacific Yew is now considered to be under threat.
- <sup>22</sup> For instance, this was discussed in a UNDP-sponsored Workshop on Developing South-South Partnerships for Strengthening National and Regional competitiveness in the Area of Innovation, Culture, Traditional Know-how and Bio-resources, Accra, Ghana, 24-26 July 2000.
- <sup>23</sup> The Initiative was launched in 1996 with the objective of stimulating trade and investment in biological resources to further sustainable development, in line with the objectives of the CBD
- <sup>24</sup> This project is financed by the United Nations Foundation for International Partnerships (UNFIP).
- <sup>25</sup> For more information, see: UNEP/UNCTAD, 2000.
- <sup>26</sup> For more information, see: [www.unctad.org/trade\\_env/index.htm](http://www.unctad.org/trade_env/index.htm).
- <sup>27</sup> See, for example Downes and Laird (1999) and the documents published during the BIOTRADE workshop in Villa de Leyva, Colombia in 1999 on [www.biotrade.org](http://www.biotrade.org) and [www.humboldt.org.co](http://www.humboldt.org.co).



## APPENDIX III

### SYSTEMS AND NATIONAL EXPERIENCES FOR PROTECTING TRADITIONAL KNOWLEDGE, INNOVATIONS AND PRACTICES: OUTCOME OF THE EXPERT MEETING

(TD/B/COM.1/EM.13/L.1, NOVEMBER 2000);  
ALSO IN TD/B/COM.1/EM.3/3, DECEMBER 2000);

1. The Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices was held in Geneva from 30 October 2000 to 1 November. The following is the outcome of the Expert Meeting. In accordance with the decision taken by the Trade and Development Board at its twenty-fourth executive session, the outcome will be circulated by the secretariat to member States with a request for policy comments on the recommendations of experts. The responses of member States will be taken into account in the preparation of secretariat documentation for the fifth session of the Commission on Trade in Good and Services, and Commodities, to be held from 26 February to 2 March 2001.

2. Individual experts put forward views and policy options for Governments to consider in protecting traditional knowledge, innovations and practices (TK). The following text reflects the diversity of the views expressed and summarizes the experts' conclusions and recommendations.

#### **A. *The role of traditional knowledge***

3. The role of TK in several economic sectors was emphasized by many experts. It was indicated that TK has intrinsic value, which goes beyond its economic value to cultural, linguistic, spiritual, ecological and other spheres. The loss of cultural diversity and biodiversity, particularly the languages spoken and applied uses of biodiversity by local and indigenous communities (LICs), is a contributing factor in the loss of TK. It was emphasized that preserving cultural diversity and local systems of self-management would protect TK. The protection of TK requires an entire spectrum of action, which may include, but is not limited to, the application of intellectual property rights (IPRs), and such action should include support to societies that are the custodians and developers of these knowledge systems.

4. The most important objectives of regulating access to TK are: generating income for LICs, building the capacity of and developing value-added activities in LICs, and respecting and preserving cultural diversity. New technologies increase the economic value of biodiversity, expanding the potential for commercialization of any given sample. On the negative side, they also make it easier to misappropriate TK.

5. TK can help increase efficiency because it is cost-effective and uses appropriate technology, effectiveness because it is locally managed and reaches the poor, and sustainability because it provides for mutual adaptation and learning and empowers local communities.

6. It was suggested that a pluralistic legal approach to the protection of TK, which would accommodate the interests of LICs, should be promoted. There should be an exchange of national experiences among countries where progress has been made in respecting customary law in national legislation.

7. Action should be taken closer to the communities themselves, and their territory and structure should be taken as a basis for such action, which would require finding more human and inclusive models, with a strong focus on women as the main carriers and preservers of TK

and biodiversity and the key to household food security, as well as on children to support the inter-generational transmission of TK.

8. Approaches to the protection and use of TK seem to be different in Latin America, Asia and Africa. This calls for regional capacity-building activities and policy dialogues.

## ***B. Role of traditional knowledge in sectors***

### *Traditional medicine*

9. Large parts of the population in developing countries depend on traditional medicine and treatment for survival. In developed countries, there is a rebound of interest in alternative treatment methods, including traditional medicine.

10. Possibilities of interaction between traditional and modern medicine should be carefully studied, and there is a need for more research on the effective use of traditional medicine, in particular with universities, polyclinics and hospitals. Traditional medicine and treatment often offer many unexplored opportunities.

11. The importance of proper protection of traditional medicine was expressed. Traditional medicinal care must be affordable to the poor, and any form of intellectual property protection should not interfere with customary practices in providing traditional medicines and health care. Article 27.3(a) of the TRIPS Agreement permits countries to exclude from patentability diagnostic, therapeutic and surgical methods for the treatment of humans or animals. It was also considered necessary to provide adequate protection for TK to prevent misappropriation and assure equitable sharing of benefits, preferably based on an international system of recognition of TK.

### *Traditional agriculture*

12. Traditional agriculture plays an important role in food security, resource management, and environmental and bio-diversity preservation.

13. TK communities need to ensure that their innovations systems are supported and rewarded and that they are not locked out of the research agenda by major companies and countries. Agricultural extension services and the direction of R&D in developing countries should take account of TK, and other social and economic policies should support and enable TK, innovations and practices to flourish as a necessary requirement for other aspects of protection, using either existing IPRs or *sui generis* systems, to be meaningful.

### *Handicraft and folklore*

14. The importance of traditional handicraft and folklore lies not only in their economic and aesthetic functions, but also in the fact that they often use materials from renewable resources and are more friendly to the environment.

15. Experts underlined the need to raise awareness among the creators of traditional folk culture of their rights in the area of intellectual property; support archiving of traditional folk culture and folklore collections and databases; encourage efforts to protect such collections and databases against misappropriation; and encourage educational institutions to introduce classes in traditional folk culture.

## ***C. Systems for the protection of traditional knowledge***

16. Customary law, IPRs, common law concepts, legal agreements or contractual arrangements and *sui generis* systems are important to trade in TK goods and TK-led development. The first step is to define the issue clearly in order to establish to what extent the use or adaptation of existing regulatory regimes or legal instruments will meet needs. The work undertaken by WIPO and the Intergovernmental Committee established earlier this year should contribute to this process. Customary law systems should be strengthened and recognized.

17. It would seem preferable to have a system of protection of TK that is consistent with other forms of IPRs. IPR-related measures can protect biodiversity and related TK. But in some cases, IPRs may not be effective in protecting TK. Several proposals were made to link IPRs and TK, e.g. through certificates of origin or disclosure clauses in patent applications and, as in the Andean Decision 406, by linking the approval of TK-based patents to the presentation of a contract for licensing.

18. Information was also provided and views expressed to the effect that IPRs are a broad and dynamic concept that is not limited to the known and existing categories of IPRs. As in the past, the system can evolve to meet new needs, including several of those expressed by TK holders.

19. "Bridging" the collective rights applicable to TK with the IPR regime in devising a system for access to and sharing of the benefits of genetic or bio-chemical resources is a formidable task and, at the same time, the most promising avenue. There is a need to explore an international framework for collective rights within the universe of IPRs, possibly including in WIPO, WTO and CBD. In this connection, it is important to bear in mind that indigenous peoples exist in a "universe" which differs from that of IPRs.

20. TK holders and others expressed the view that the current IPR system is inappropriate for the recognition and protection of TK systems because of the inherent conflict between these two systems. According to this view, the patenting of life forms should be banned because it attacks the values and the livelihoods of LICs. All forms of bio-piracy should be eliminated, and WIPO and other relevant organizations should work towards this objective.

21. The protection of biodiversity depends on the protection of TK that goes with it. A number of countries have gained interesting experience with legislative, IPR and non-IPR measures, e.g. the Andean Community, Costa Rica, Brazil, India, Nigeria, Panama, Thailand and the Philippines. There are practical problems for the effective application and implementation of legal frameworks for TK protection. Some countries have IPR-related regulation that requires disclosure of the source of information.

22. TK holders expressed concern that one type of IPR system, e.g. patents, is being universalized and prioritized to the exclusion of all others, including their counterpart customary systems. Concern was also expressed that the patent system can also lead to misappropriation of TK.

23. There are also policy measures and non-legal instruments that can offer some degree of protection. These might include codes of conduct for researchers and commercial entities or grassroots initiatives such as community-controlled databases.

24. The rights of TK holders may be acknowledged in different terms: up-front payments, royalties, fees for material services, involvement of local researchers and communities in R&D, milestone payments etc. The associated procedures may also be quite diverse, e.g. certificates of origin, trademarks, copyrights, geographical indicators, contracts, permits, know-how licenses, material transfer agreements (for *ex situ* collection), and public register confidentiality. A possible role for the Global Bio-Collecting Society in monitoring access to TK could be explored.

#### **D. Sui generis systems for the protection of TK**

25. Several elements constituting a *sui generis* system for the protection of TK were discussed and a number of common elements emerged from the discussion, which are included in the recommendations for action at the national level (paragraph 34). A view was expressed that the protection of TK should influence national policies in areas such as agriculture, forestry and investment. Many countries have made advances on *sui generis* legislation for protecting TK. These systems should be developed in close consultation with TK holders and should include prior informed consent by the LICs as an intrinsic element of their legislative frameworks. Several model laws have also been developed, including those of the Organization of African Unity and the Third World Network.

26. National *sui generis* systems by themselves would not be adequate to protect TK. Exclusion from patentability of TK-based products in one country, for instance, would not prevent other countries from granting patents. A need was therefore expressed for an international mechanism for protecting TK. In this context, minimum standards for an international *sui generis* system for protecting TK could be devised.

### **E. Harnessing TK for development and trade**

27. The top-down approach prevailing in development policies has been dominated by the idea of national Governments and intergovernmental organizations providing LICs with what they lacked, e.g. funding, training and employment. TK is one area where there is a need to cultivate a bottom-up approach to development, building upon the resources and strengths of LICs, their experiences and creativity.

28. There is a need to explore the potential of information and communication technologies for the transmission of TK, e.g. through virtual markets, community multi-media centers and culturally specific education activities. The key role of development partners is to empower communities to use global *and* local knowledge. However, empowerment alone is not sufficient. Capacity building should support it. Experts identified a number of areas on which capacity-building efforts should focus: institutional consolidation of LICs; promoting intercultural exchange of experience; facilitating policy dialogue; awareness-raising on the importance of TK and cultural impact assessment; documentation of traditional knowledge; converting TK into economically viable products and services; and commercializing TK-based products and services.

29. Whereas commercialization of TK-based products and services provides a powerful incentive to communities to retain the TK base, extreme care needs to be taken to ensure that the resource base of LICs is not over-exploited or permanently destroyed. Making the commercialization of TK sustainable takes a number of measures at several levels: (*in situ*) conservation; generating awareness about the importance of sustainable resource use; monitoring resource use; changing policy for TK collection with the consent and participation of local communities; training in sustainable harvesting; and assisting in simple first and second degree processing of TK-based products to add value. The current IPR regime does not create a level legal field for LICs. It is all the more important to assess the risks of over-exploitation and consequent loss of TK associated with commercialization.

30. TK holders pointed out that too much emphasis is put on the commercialization of TK, rather than on its conservation and further development. It is necessary to protect the underlying values of TK.

31. Targeting local communities as beneficiaries may trigger conflicts between those of them that have overlapping resource bases or TK. The idea of a community knowledge fund as a recipient of benefits derived from commercialization of TK-based products deserves special attention. However, overheads associated with such funds should be kept to a minimum.

32. The share of benefits accruing to LICs from the commercial use of TK should be proportionate to the volume of trade in TK-based products and services.

### **F. Recommendations at the national level**

33. There is a continued need for raising awareness of the role and value of TK among LICs, policy makers and other stakeholders. LICs, particularly women, should be fully involved in the development of policies aimed at protecting TK.

34. Apart from using suitable modern IPR instruments for appropriate cases, a national *sui generis* system for the protection of TK may be useful. Such a *sui generis* system could include the following common elements: collectively held TK rights; registers of knowledge; clear systems of access to such rights and benefit-sharing; clarification of land resource rights as part of the holding of TK rights; wide participation and consultation; and creation of effective incentives for research. In addition, TK protection needs to be reflected in other national policy areas, such as agriculture, forestry, investment and finance.

35. There is a need to carry out training and consultation programmes among LICs, especially on the application of customary law.

36. National representatives should try to have the meeting's outcome translated into national or local languages and distributed to LICs.

### **G. Recommendations at the multilateral level**

37. A number of institutions are carrying out work programmes on TK. There should be continued coordination and cooperation between the intergovernmental organizations concerned. An impartial working group could be created to coordinate these efforts. In addition to other fora, TK protection should also be discussed in the WTO.

38. The regional diversity reflected in the debate call for a regional approach to exploring possibilities for the protection of TK and the commercialization of TK-based products.

39. Indigenous groups at the Meeting called for the establishment of an Indigenous Peoples Working Group for Protecting TK of the LICs. It was also noted that there should be no duplication with existing work and processes in other international fora, including CBD and the Economic and Social Council.

40. National *sui generis* systems by themselves will not be sufficient to protect TK adequately. There is therefore a need to explore an international mechanism that might explore minimum standards of an international *sui generis* system for TK protection. Any international discussions should take due account of practical experiences gained in TK-related issues at the national and regional level. LICs should be involved in building an international framework for collective rights. Capacity-building targeting women as primary TK holders is an essential component of such activities.

### **H. Recommendations to UNCTAD**

41. UNCTAD, within its mandate as expressed in the Bangkok Plan of Action (TD/386), subject to available resources, and in cooperation and avoiding overlap with other relevant international and regional organizations, should:

- Organize workshops and seminars at the regional and national levels and encourage the involvement of indigenous and local communities;
- Contribute to the ongoing processes in WIPO, WTO, CBD, UNCCD and other organizations;
- Promote the design and implementation of comprehensive national strategies to harness TK for development and trade;
- Strengthen capacity-building programmes on TK, including within the framework of the BIOTRADE Initiative, the UNEP-UNCTAD Capacity Building Task Force (CBTF) on Trade, Environment and Development and ongoing and planned UNDP/UNCTAD projects;
- Further develop the training module on Traditional Knowledge, Trade and Development;
- Assist interested developing countries in exploring *sui generis* systems for the protection of TK, including possible multilateral aspects of such systems;
- Review practical difficulties in developing and implementing effective legal frameworks for the protection of TK;
- Assist in the formation of databases on TK at national and international levels to disseminate information and ensure consistency among different organizations;
- Publish, including on the Internet, the papers submitted to this workshop and circulate the monograph among its member countries and NGOs representing LICs.





## APPENDIX IV

### AGREED RECOMMENDATIONS OF THE COMMISSION ON TRADE IN GOODS AND SERVICES, AND COMMODITIES ON: SYSTEMS AND NATIONAL EXPERIENCES FOR THE PROTECTION OF TRADITIONAL KNOWLEDGE, INNOVATIONS AND PRACTICES: THE SUSTAINABLE USE OF BIOLOGICAL RESOURCES.

(TD/B/COM.1/L.16, MARCH 2001).

1. The Commission notes with satisfaction the interest generated by the Expert Meeting, as witnessed by the participation of a large number of experts, including representatives from indigenous communities, the richness of the debate and the useful exchange of national experiences. The Commission takes note of the outcome of the Expert Meeting, as contained in document TD/B/COM.1/33 and TD/B/COM.1/EM.13/3, reflecting the diversity of views expressed and the experts' conclusions and recommendations. It also welcomes the large number of papers submitted by experts. These provide useful information for member States. After consideration of the outcome of the Expert Meeting and document TD/B/COM.1/38, the Commission makes the following agreed recommendations.

#### ***Recommendations to Governments***

2. Governments, at the national and local levels and in cooperation with local and indigenous communities (LICs) are encouraged to:

- a) Raise awareness of the role and value of traditional knowledge (TK), promote the sustainable use of genetic resources, support the innovation potential of LICs, facilitate research on TK-based products and services, provide training to LICs including women and facilitate the documentation of TK.
- b) Promote, where appropriate, the commercialization of TK-based products and services with an emphasis on equitable benefit sharing with LICs, implement national legislation for the protection of TK.

#### ***Recommendations to the international community***

3. The issue of protection of TK has many aspects and is being discussed in several forums, in particular the CBD Working Group on the Implementation of Article 8(j) and Related Provisions, the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore and the WTO (both the TRIPS Council and the Committee on Trade and Environment). Therefore, continued coordination and cooperation between intergovernmental organizations working in the field of protection of TK should be promoted. The Commission makes the following recommendations at the international level :

- a) Promote training and capacity-building to effectively implement protection regimes for TK in developing countries, in particular in the least developed among them;
- b) Promote fair and equitable sharing of benefits derived from TK in favour of local and traditional communities;
- c) Encourage the WTO to continue the discussions, on the protection of TK;
- d) Exchange information on national systems to protect TK and to explore minimum standards for internationally recognized *sui generis* system for TK protection.

#### ***Recommendations to UNCTAD***

4. UNCTAD, within its mandate, as defined in paragraphs 147 and 106 of the Plan of Action, should in the area of traditional knowledge:

- a) Conduct analytical work and organize regional workshops to exchange national experiences and examine strategies on TK-related issues, in cooperation with WIPO, CBD and regional organizations. In this context, the Commission noted the special references made to cooperation with the OAU;
- b) Develop further the TrainforTrade module on Traditional Knowledge, Trade and Development;
- c) Support, in cooperation with WHO and other pertinent organizations, initiatives taken by interested developing countries for capacity-building to identify means to protect and promote the further development of traditional medicine, taking into account environment and biodiversity fields;
- d) Assist on request, member States and indigenous and local communities in exploring policies to harness traditional knowledge for trade and development, including through the UNEP-UNCTAD Capacity Building Task Force (CBTF) on Trade, Environment and Development and the Biotrade Initiative;
- e) Assist, in cooperation with relevant international organizations, including the ITC, developing countries, where appropriate, with the commercialization of TK-based products, including the creation of niche markets for such products;
- f) Assist interested developing countries in exploring ways for the protection of TK, recognizing and supporting the ongoing activities at WIPO;
- g) Publish the papers submitted to the Expert Meeting, including on the Internet.

5. The UNCTAD secretariat is also encouraged to support, as appropriate, the work of the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore and the CBD Working Group on the Implementation of Article 8(j) and Related Provisions. The Commission welcomes cooperation between UNCTAD and UNCCD.

## APPENDIX V

### COMMUNIQUÉ OF THE INTERNATIONAL SEMINAR ON SYSTEMS FOR PROTECTING AND COMMERCIALIZING TRADITIONAL KNOWLEDGE, ORGANIZED BY THE GOVERNMENT OF INDIA AND UNCTAD SECRETARIAT, NEW DELHI, APRIL 2002.

1. An International Seminar was convened with the participation of representatives from Brazil, Cambodia, Chile, China, Colombia, Cuba, Egypt, Kenya, Peru, Philippines, Sri Lanka, Thailand, Venezuela and India at New Delhi from 3-5 April 2002. The Seminar was sponsored by India and UNCTAD, where, apart from national delegations, a number of international experts and inter-governmental organizations expressed their views. The range of issues covered included the commercialisation of TK, exchange of national experiences of systems for protection of TK, including *sui generis* systems, and the international dimension of protection of TK.

2. Recognizing the serious and irreversible loss to bio-diversity at the global level, participants expressed a need for creating and strengthening systems for protecting biodiversity and its associated traditional knowledge (TK), innovations and practices. In this context, participants expressed the need for understanding the viability of various instruments including national *sui generis* systems of protection and their recognition at the international level. This issue has been the subject of debate in various inter-governmental forums including WTO, WIPO, CBD, UNCTAD and FAO. A number of countries expressed strong views on the need for identifying new means for protecting TK in the light of increasing globalization and its impact on local and indigenous communities. Participants expressed a strong view that apart from existing IPRs, suitable systems based on national experiences through customary laws and other means need to be fully explored.

3. Participants noted that traditional and local communities historically developed customary and other forms of protection over TK, which enabled its preservation and growth. Loss of biodiversity and its associated TK is in part due to increasing globalisation. It is in part also due to misappropriation of TK *inter alia* through improper granting of patents and lack of rewards to TK holders in the patent system. These were discussed as some of the issues, which need urgent redressal. To offset such impacts of globalisation, *sui generis* systems have been developed at the national level to protect TK and reward TK holders. While these do provide the means for protection and growth of TK within national jurisdictions, the participants felt that national systems by themselves would not be adequate to fully protect and preserve TK. For example, the ability of patent offices in a national jurisdiction to prevent bio-piracy as well as to install informed consent mechanisms to ensure reward to TK holders, does not ipso facto lead to similar action on the patent application in other countries. A need was therefore expressed for an international framework for protecting TK. In this connection it was felt that the existing forms of IPR protection regimes may not sufficiently recognize the rights of TK holders. Similarly, benefit-sharing mechanisms installed through national legislation would need to be recognised in user countries.

4. Commercialisation of TK based products and services, where appropriate, should be promoted with an emphasis on equitable benefit-sharing with local and indigenous communities and with their prior informed consent. Particular attention should be paid to the sustainable use and management of biological resources in the process. The participants expressed a view that the transfer, utilization and commercialization of TK should take place through fair and equitable terms and conditions, for which a set of guidelines should be developed with the help of relevant international intergovernmental organizations. Where commercialisation of TK derived products takes place outside the country of origin, there is a need to establish mechanisms for ensuring equitable benefit sharing.

5. Discussions then focused on the process of identifying essential components of a framework for international recognition of various *sui generis* systems, customary law and others for protection of TK. Some of the possible components identified include:

- i) local protection to the rights of TK holders through national level *sui generis* regimes including customary laws as well as others and its effective enforcement *inter alia* through systems such as positive comity of protection systems for TK
- ii) protection of traditional knowledge through registers of TK databases in order to avoid misappropriation
- iii) a procedure whereby the use of TK from one country is allowed, particularly for seeking IPR protection or commercialization, only after the competent national authority of the country of origin gives a certificate that source of origin is disclosed and prior informed consent, including acceptance of benefit sharing conditions, obtained
- iv) an internationally agreed instrument that recognizes such national level protection. This would not only prevent misappropriation but also ensure that national level benefit sharing mechanisms and laws are respected worldwide.

6. The participants recommended that their countries would work together in various inter-governmental forums particularly CBD, FAO, WIPO, WTO, and UNCTAD to develop an international framework for the recognition of national systems of protection of traditional knowledge, including diverse *sui generis* systems. This was found to be particularly relevant and urgent in the context of the ongoing work programme pursuant to the Doha Ministerial Declaration. Further work should also be undertaken by inter-governmental organisations including UNCTAD on protection and commercialisation of TK with a view to promoting its sustainable use.

## APPENDIX VI

### TEXT OF THE ORGANIZATION OF AFRICAN UNITY (OAU) MODEL LAW<sup>1</sup>

#### AFRICAN MODEL LEGISLATION FOR THE PROTECTION OF THE RIGHTS OF LOCAL COMMUNITIES, FARMERS AND BREEDERS, AND FOR THE REGULATION OF ACCESS TO BIOLOGICAL RESOURCES

##### Preamble

*Whereas*, the State and its people exercise sovereign and inalienable rights over their biological resources;

*Whereas*, the rights of local communities over their biological resources, knowledge and technologies that represent the very nature of their livelihood systems and that have evolved over generations of human history, are of a collective nature and, therefore, are *a priori* rights that take precedence over rights based on private interests;

*Whereas*, the vital role that women play in the generation, conservation and sustainable use of biological diversity and associated knowledge and technologies is self-evident, and it thus becomes essential to make possible their full participation at all levels of policy making and implementation in relation to biological diversity and associated knowledge and technologies;

*Whereas*, it is necessary to protect and encourage cultural diversity, giving due value to the knowledge, technologies, innovations and practices of local communities with respect to the conservation, management and use of biological resources;

*Whereas*, it is the duty of the State and its people to regulate access to biological resources and to community knowledge and technologies;

*Whereas*, the State recognizes the necessity of providing adequate mechanisms for guaranteeing the just, equitable and effective participation of its citizens in the protection of their collective and individual rights and in making decisions that affect its biological and intellectual resources as well as the activities and benefits derived from their utilization;

*Whereas*, there is the need to promote and support traditional and indigenous technologies for the conservation and sustainable use of biological resources and to complement them by appropriately developed modern technologies;

*Whereas*, there is the need to implement the relevant provisions of the Convention on Biological Diversity, in particular Article 15 on access to genetic resources, and Article 8(j) on the preservation and maintenance of knowledge, innovations and practices of indigenous and local communities;

*Whereas*, all forms of life are the basis for human survival, and, therefore, the patenting of life, or the exclusive appropriation of any life form or part or derivative thereof, violates the fundamental human right to life;

*Now, therefore*, it is hereby legislated as follows:

##### PART I. Objectives

The main aim of this legislation shall be to ensure the conservation, evaluation and sustainable use of biological resources, including agricultural genetic resources, and knowledge and technologies in order to maintain and improve their diversity as a means of sustaining all life support systems.

The specific objectives of this legislation shall be to:

- a) recognize, protect and support the inalienable rights of local communities, including farming communities, over their biological resources, knowledge and technologies;
- b) recognize and protect the rights of breeders;

- c) provide an appropriate system of access to biological resources, community knowledge and technologies subject to the prior informed consent of the State and the concerned local communities;
- d) promote appropriate mechanisms for a fair and equitable sharing of benefits arising from the use of biological resources, knowledge and technologies;
- e) ensure the effective participation of concerned communities, with a particular focus on women, in making decisions as regards the distribution of benefits that may derive from the use of their biological resources, knowledge and technologies;
- f) promote and encourage the building of national and grassroots scientific and technological capacity relevant to the conservation and sustainable use of biological resources;
- g) provide appropriate institutional mechanisms for the effective implementation and enforcement of the rights of local communities, including farming communities and breeders, and the conditions of access to biological resources, community knowledge and technologies;
- h) promote the conservation, evaluation and sustainable utilization of biological resources with a particular focus on the major role women play;
- i) promote improvements in the productivity, profitability, stability and sustainability of major production systems through yield enhancement and maintenance of biological diversity;
- j) promote the supply of good-quality seed/planting material to farmers; and
- k) ensure that biological resources are utilized in an effective and equitable manner in order to strengthen the food security of the nation.

## PART II. Definitions and scope

### 1. Definitions.

The following terms shall, in this legislation, be used as defined below:

**Access** is the acquisition of biological resources, their derivatives, community knowledge, innovations, technologies or practices as authorized by the National Competent Authority.

**Benefit sharing** is the sharing of whatever accrues from the utilization of biological resources, community knowledge, technologies, innovations or practices.

**Biological resource** includes genetic resources, organisms or parts thereof, populations, or any other component of ecosystems, including ecosystems themselves, with actual or potential use or value for humanity.

**Collector** is any natural or legal person, entity or agent obtaining access to biological resources, local practices, innovations, knowledge or technologies under authority given by the National Competent Authority.

**Community intellectual rights** are those rights held by local communities over their biological resources or parts or derivatives thereof, and over their practices, innovations, knowledge and technologies.

**Community knowledge or indigenous knowledge** is the accumulated knowledge that is vital for conservation and sustainable use of biological resources and/or that is of socio-economic value, and that has been developed over the years in indigenous/local communities.

**Derivative** is a product developed or extracted from a biological resource; a derivative may include such products as plant varieties, oils, resins, gums, proteins, etc.

**Ex situ condition** is the condition in which a biological resource is found outside its natural habitat. Under the present law, any lineage that is cultivated within its country of origin is not considered to be in an *ex situ* condition.

**Innovation** is any generation of a new, or an improvement of an existing, collective and/or cumulative knowledge or technology through alteration or modification, or the use of the properties, values or processes of any biological material or any part thereof, whether documented, recorded, oral, written or in whatever manner otherwise existing.

**In situ condition** is the condition in which a biological resource is found in its ecosystem or natural habitat. In the case of a domesticated or cultivated variety, its condition is *in situ* when that variety is found in the cultural context in which its specific properties have been developed.



**Local community** is a human population in a distinct geographical area, with ownership over its biological resources, innovations, practices, knowledge, and technologies governed partially or completely by its own customs, traditions or laws.

**National Competent Authority** is the entity authorized by the State to supervise and watch over the implementation of one or more of the components of the present law.

**Prior informed consent (PIC)** is the giving by a collector of complete and accurate information, and, based on that information, the prior acceptance of that collector by the government and the concerned local community or communities to collect biological resources, or indigenous knowledge, or technologies.

## 2. Scope

- 1) This legislation applies to:
  - i) Biological resources in both *in situ* and *ex situ* conditions;
  - ii) The derivatives of the biological resources;
  - iii) Community knowledge and technologies;
  - iv) Local and indigenous communities; and
  - v) Plant breeders.
- 2) This legislation shall not affect the following:
  - i) The traditional systems of access, use or exchange of biological resources;
  - ii) Access, use and exchange of knowledge and technologies by and between local communities.
- 3) The sharing of benefits based on the customary practices of the concerned local communities, provided that the provisions of paragraph 2 shall not be taken to apply to any person or persons not living in the traditional and customary way of life relevant to the conservation and sustainable use of biological resources.

## PART III. Access to biological resources

### 3. Application for access to biological resources and to the knowledge and technologies of local communities.

- 1) Any access to any biological resources and knowledge or technologies of local communities in any part of the country shall be subject to an application for the necessary prior informed consent and written permit.
- 2) Any access to any biological resource in a protected area shall be subject to an application for the necessary prior informed consent and written permit.
- 3) All applications for the necessary consent and written permit to access any biological resource, community knowledge or technology shall be directed to the National Competent Authority unless otherwise explicitly provided for by law.

### 4. Prior Informed Consent (PIC)

- 1) In making an application for access as provided in the article above, the applicant shall provide the following information:
  - i) the identity of the applicant and the documents that testify to her/his legal capacity to contract, including, where appropriate, the identity of all partners with the contracting party;
  - ii) the resources to which access is sought, including the sites from which it will be collected, its present and potential uses, its sustainability and the risks that may arise from access to it;
  - iii) whether any collection of the resource endangers any component of biological diversity and the risks that may arise from the access;
  - iv) the purpose for which access to the resource is requested, including the type and extent of research, teaching or commercial use expected to be derived from it;
  - v) a description of the manner and extent of local and national collaboration in the research into and development of the biological resource concerned;
  - vi) identification of the national institution or institutions that will participate in the research and be in charge of the monitoring process;

- vii) the identity of the location where the research and development will be carried out;
  - viii) the primary destination of the resource and its probable subsequent destination(s);
  - ix) the economic, social, technical, biotechnological, scientific, environmental and/or any other benefits that are intended, or may be likely to, accrue to the country and local communities providing the biological resource as well as the collector and the country or countries where she/he operates;
  - x) the proposed mechanisms and arrangements for benefit sharing;
  - x) a description of the innovation, practice, knowledge or technology associated with the biological resource; and
  - xi) an environmental and socio-economic impact assessment covering at least the coming three generations, in cases where the collection is in large quantities.
- 2) Nothing in paragraph (1) shall prevent the National Competent Authority from requesting any other information it may deem necessary for the effective implementation of this legislation.

#### **5. Requirement of Consultation and Prior Informed Consent (PIC)**

- 1) Any access to biological resources, knowledge and/or technologies of local communities shall be subject to the written prior informed consent of:
- i) the National Competent Authority; and
  - ii) the concerned local communities, ensuring that women are also involved in decision making.
- 2) Any access obtained without the prior informed consent of the State and the concerned local community or communities shall be deemed to be invalid and shall be subject to the penalties provided in this legislation or any other legislation that deals with access to biological resources.
- 3) The National Competent Authority shall consult with the local community or communities in order to ascertain that its/their consent is sought and granted. Any access granted without consultation with the concerned community or communities shall be deemed to be invalid and in violation of the principle of and requirement for prior informed consent as required under this Article.

#### **6.Placement of Completed Application Form in Public Registry**

- 1) Upon completion of the application, the National Competent Authority shall place, or cause to be placed, the said application in a public registry or gazette, or cause it to be published in a newspaper that is reasonably accessible to the public for a period of X days.
- 2) Any person may consult the public registry and comment on the application.
- 3) The National Competent Authority shall cause the wide and effective dissemination of the relevant information to the communities concerned and to other interested parties.

#### **7.Granting of Access.**

- 1) The granting of an access permit shall be carried out by the National Competent Authority or any person duly authorized to do so under the provisions of this legislation within a specified time limit.
- 2) Any access permit shall be granted through a signed written agreement between the National Competent Authority and/or the concerned local community or communities on the one hand, where applicable, and the applicant or collector on the other hand.
- 3) The access permit shall be valid only if there is written prior informed consent.

#### **8. Contents of the Agreement**

- 1) The agreement referred to in article 7 shall contain commitments undertaken or to be undertaken by the collector, as follows.
- i) to adhere to a limit set by the National Competent Authority on the quantity and specification of the quality of the biological resource that the collector may obtain and/or export;
  - ii) to guarantee to deposit duplicates of, with complete field information on, each specimen of the biological resource or the records of community innovation, practice, knowledge or technology collected with the duly designated governmental agencies and, if so required, with local community organizations;

- iii) to inform immediately the National Competent Authority and the concerned local community or communities of all findings from research and development on the resource;
  - iv) not to transfer the biological resource or any of its derivatives or the community innovation, practice, knowledge or technology to any third party without the authorization of the National Competent Authority and the concerned local community or communities;
  - v) not to apply for any form of intellectual property protection over the biological resource or parts or derivatives thereof and not to apply for intellectual property rights protection over a community innovation, practice, knowledge or technology without the prior informed consent of the original providers;
  - vi) to provide for the sharing of benefits;
  - vii) to condition access on a commitment to contribute economically to the efforts of the State and the concerned local community or communities in the regeneration and conservation of the biological resource, and the maintenance of the innovation, practice, knowledge or technology to which access is sought;
  - viii) to submit to the National Competent Authority a regular status report of research and development on the resource concerned and, where the biological resource is to be collected in large quantities, on the ecological state of the area; and
  - ix) to abide by the relevant laws of the country, particularly those regarding sanitary control, biosafety and the protection of the environment, as well as by the cultural practices, traditional values and customs of the local communities.
- 2) All efforts should be made for the research to be done in the country and in a manner that facilitates the participation of actors in the country of the provider of the biological resource.

### **9. Patents over Life Forms and Biological Processes**

- 1) Patents over life forms and biological processes are not recognized and cannot be applied for.
- 2) The collector shall, therefore, not apply for patents over life forms and biological processes under this legislation or under any other legislation relevant to the regulation of access and use of a biological resource, community innovation, practice, knowledge and technology, and the protection of rights therein.

### **10. Approval of Granting of Access.**

The National Competent Authority shall approve the granting of access to the biological resource or the community innovation, practice, knowledge or technology in question with any conditions it may deem necessary. In granting access the National Competent Authority shall ensure that all the requirements under this legislation have been fulfilled.

### **11. Conditions Pertaining to Academic and Research Institutions, Public Agencies and Intergovernmental Institutions.**

- 1) The National Competent Authority shall subject all applications for access to a biological resource or a community innovation, practice, knowledge or technology to the prior informed consent of the concerned community or communities.
- 2) The National Competent Authority shall determine the appropriate conditions to be met under the written agreement referred to in Article 8, by academic and research institutions, public agencies and intergovernmental institutions.
- 3) The application for access for research purposes shall clearly state the objective of the research and the relation of the applicant to industry. Neither the sample nor the associated information shall be transferred without a material transfer agreement reserving the prior rights of the State and/or community or communities.
- 4) Where the institutions referred to in this Article change their activities to be predominantly the commercialization of a biological resource, the National Competent Authority shall cause the conditions and terms to be varied accordingly.

## **12. Benefit Sharing**

- 1) The access permit should be subject to the payment, made before commencement of collection, of a fee the sum of which will depend on whether or not the collection is to be used for commercial purposes, and the number of samples, the area of collecting, the duration of collection and whether or not the collector is granted exclusive rights.
2. The State and the community or communities shall be entitled to a share of the earnings derived when any biological resource and/or knowledge collected generates, directly or indirectly, a product used in a production process.

## **13. Types of Permit to be Granted for Access**

- 1) Having ascertained that the conditions set by the prior informed consent procedure have been fulfilled, the National Competent Authority shall grant the applicant/collector the appropriate permit for access. This may be an academic research permit, a commercial research permit, or a commercial exploitation permit.
- 2) No person shall be in possession of and use two types of permit at the same time for the same resource unless granted written permission to do so.
- 3) Nothing in this Article shall be deemed to limit the National Competent Authority's power to issue any other type of access permit.

## **14. Revocation of Access Permit**

- 1) The National Competent Authority may unilaterally withdraw consent and repossess the written permit under the following conditions:
  - i) when there is evidence that the collector has violated any of the provisions of this legislation;
  - ii) when there is evidence that the collector has failed to comply with the agreed terms; and
  - iii) when there is failure to meet any of the conditions of access;
  - iv) for reasons of overriding public interest; or
  - v) for the protection of the environment and biological diversity.
- 2) Any termination or withdrawal of consent shall be done in consultation with the concerned local community or communities.

## **15. Restrictions on Activities Related to Access to or Introduction of Biological Resources**

The National Competent Authority should establish restrictions to or prohibitions on those activities that are directly or indirectly related to access to or introduction of a biological resource, particularly in cases of:

- i) endangered taxa;
- ii) endemism or rarity;
- iii) adverse effects on human health or on the quality of life or the cultural values of local communities;
- iv) environmental impacts that are undesirable or difficult to control;
- v) danger of genetic erosion or loss of ecosystems, their resources or their components that arises from undue or uncontrolled collection of biological resources;
- vi) non-compliance with rules on biosafety or food security; and
- vii) use of resources for purposes contrary to the national interest and to relevant international agreements entered into by the country.

## **PART IV. Community rights**

### **16. Recognition of the Rights of Local and Indigenous Communities**

The State recognizes the rights of communities over the following:

- i) their biological resources;
- ii) the right to collectively benefit from the use of their biological resources;
- iii) their innovations, practices, knowledge and technologies acquired through generations;
- iv) the right to collectively benefit from the utilization of their innovations, practices, knowledge and technologies;

- v) their rights to use their innovations, practices, knowledge and technologies in the conservation and sustainable use of biological diversity;
- vi) the exercise of collective rights as legitimate custodians and users of their biological resources;

### **17. Application of the Law on Community Rights**

The State recognizes and protects the community rights that are specified in Article 16 as they are enshrined and protected under the norms, practices and customary law found in, and recognized by, the concerned local and indigenous communities, whether such law is written or not.

### **18. Prior Informed Consent (PIC) of Local Communities.**

Any access to a biological resource, innovation, practice, knowledge or technology shall be subject to the prior informed consent of the concerned community or communities, ensuring that women fully and equally participate in decision making.

### **19. Right to Refuse Consent and Access**

Local communities shall have the right to refuse access to their biological resources, innovations, practices, knowledge and technologies where such access will be detrimental to the integrity of their natural or cultural heritage.

### **20. Right to Withdraw or Place Restrictions on Consent and Access**

Local communities shall have the right to withdraw consent or place restrictions on activities relating to access where such activities are likely to be detrimental to their socio-economic life or their natural or cultural heritage.

### **21. Right to Traditional Access, Use and Exchange**

- 1) Local communities shall exercise their inalienable right to access, use, exchange or share their biological resources in sustaining their livelihood systems as regulated by their customary practices and laws.
- 2) No legal barriers shall be placed on the traditional exchange system of the local communities in the exercise of their rights as provided for in paragraph (1) above and in other rights that may be provided by the customary practices and laws of the concerned local communities.

### **22. Right to Benefit**

- 1) The State shall ensure that at least 50 (fifty) per cent of benefits provided for in Article 12.2 shall be channelled to the concerned local community or communities in a manner that treats men and women equitably.
- 2) The sharing of the benefits in paragraph 1) above shall involve the full participation and approval of the concerned local community or communities.

### **23. Recognition of Community Intellectual Rights**

- 1) The community intellectual rights of the local communities, including traditional professional groups, particularly traditional practitioners, shall at all times remain inalienable, and shall be further protected under the mechanism established by this legislation.
- 2) An item of community innovation, practice, knowledge or technology, or a particular use of a biological or any other natural resource, shall be identified, interpreted and ascertained by the local communities concerned themselves under their customary practice and law, whether such law is written or not.
- 3) Non-registration of any community innovations, practices, knowledge or technologies is not to mean that these are not protected by Community Intellectual Rights.
- 4) The publication of a written or oral description of a biological resource and its associated knowledge and information, or the presence of these resources in a gene bank or any other collection, or their local use, shall not preclude the local community from exercising its community intellectual rights in relation to those resources.



## **PART V. Farmers' rights**

### **24. Recognition of Farmers' Rights**

- 1) Farmers' rights are recognized as stemming from the enormous contributions that local farming communities, especially their women members, of all regions of the world, particularly those in the centres of origin or diversity of crops and other agro-biodiversity, have made in the conservation, development and sustainable use of plant and animal genetic resources that constitute the basis of breeding for food and agriculture production; and
- 2) For farmers to continue making these achievements, therefore, Farmers' Rights have to be recognized and protected.

### **25. Application of the Law on Farmers' Varieties**

- 1) Farmers' varieties and breeds are recognized and shall be protected under the rules of practice as found in, and recognized by, the customary practices and laws of the concerned local farming communities, whether such laws are written or not.
- 2) A variety with specific attributes identified by a community shall be granted intellectual protection through a variety certificate that does not have to meet the criteria of distinction, uniformity and stability. This variety certificate entitles the community to have the exclusive rights to multiply, cultivate, use or sell the variety, or to license its use without prejudice to the Farmers' Rights set out in this law.

### **26. Farmer's Rights**

- 1) Farmers' Rights shall, with due regard for gender equity, include the right to:
  - a) the protection of their traditional knowledge relevant to plant and animal genetic resources;
  - b) obtain an equitable share of benefits arising from the use of plant and animal genetic resources;
  - c) participate in making decisions, including at the national level, on matters related to the conservation and sustainable use of plant and animal genetic resources;
  - d) save, use, exchange and sell farm-saved seed/propagating material of farmers' varieties;
  - e) use a new breeders' variety protected under this law to develop farmers' varieties, including material obtained from gene banks or plant genetic resource centres; and
  - f) collectively save, use, multiply and process farm-saved seed of protected varieties.
- 2) Notwithstanding sub-paragraphs c) and d), the farmer shall not sell farm-saved seed/propagating material of a breeders' protected variety in the seed industry on a commercial scale.
- 3) Breeders' rights on a new variety shall be subject to restriction with the objective of protecting food security, health, biological diversity and any other requirements of the farming community for propagation material of a particular variety.

### **27. Certification of Farmers' Varieties**

1. Any product derived from the sustainable use of a biological resource shall be granted a certificate or label of recognition.
2. A certificate of fair trade shall be granted to a product derived from a biological resource or knowledge or technology, when a significant part of the benefits derived from the product go back to the local community.

## **PART VI Plant breeders' rights**

### **28. Recognition of Plant Breeders' Rights.**

Plant Breeders' Rights stem from the efforts and investments made by persons/institutions for the development of new varieties of plants, as defined in Article 41, being the basis for providing recognition and economic reward.



## 29. Characteristics of New Varieties.

A variety will be considered new if it:

- a) is, by reason of one or more identifiable characteristics, clearly distinguishable from all varieties the existence of which is a matter of common knowledge at the effective date of application for the grant of a plant Breeders' Rights;
- b) is stable in its essential characteristics, in that after repeated reproduction or propagation or, where the applicant has defined a particular cycle of reproduction or multiplication, at the end of each cycle, it remains true to its description;
- c) is, having regard to its particular features of sexual reproduction or vegetative propagation, a sufficiently homogenous variety or is a well-defined multiline.

## 30. Rights of Plant Breeders

- 1) A Plant Breeders' Right, with respect to a new variety, is:
  - a) the exclusive right to sell, including the right to license other persons to sell plants or propagating material of that variety;
  - b) the exclusive right to produce, including the right to license other persons to produce, propagating material of that variety for sale;
- 2) Plant Breeders' Rights with respect to a plant variety are subject to the conditions provided in Part V, the farmers' rights part of this Act.

## 31. Exemptions to the Rights of Breeders

- 1) Notwithstanding the existences of Plant Breeders' Rights with respect to a plant variety, any person or farmers' community may:
  - a) propagate, grow and use plants of that variety for purposes other than commerce;
  - b) sell plants or propagating material of that variety as food or for another use that does not involve the growing of the plants or the propagation of that variety;
  - c) sell, within a farm or any other place at which plants of that variety are grown, any plants or propagating material of that variety at that place;
  - d) use plants or propagating material of the variety as an initial source of variation for the purpose of developing another new plant variety, except where the person makes repeated use of plants or propagating material of the first-mentioned variety for the commercial production of another variety;
  - e) sprout the protected variety as food for home consumption or for the market;
  - f) use the protected variety in further breeding, research or teaching;
  - g) obtain, with the conditions of utilization, such a protected variety from gene banks or plant genetic resources centres.
- 2) Farmers will be free to save, exchange and use part of the seed from the first crop of plants they have grown for sowing in their own farms to produce a second and subsequent crops subject to conditions specified in Part V, the farmers' rights part of this Act.

## 32. Application of Breeders' Rights

- 1) Subject to this Act, a breeder of a new plant variety may make an application to the National Competent Authority for Plant Breeders' Rights with respect to the variety.
- 2) A breeder of a new variety, or her/his successor, has the right to make an application for Plant Breeders' Rights with respect to that variety, whether the breeder is a citizen or a foreigner, whether she/he is resident or not, and whether the variety was bred locally or abroad.
- 3) Where two or more persons are entitled to make an application for Plant Breeders' Rights with respect to a new variety, whether because they bred the plant variety jointly or independently or otherwise, those persons or some of those persons may make a joint application for those rights.
- 4) Where two or more persons breed a new plant variety jointly, one of those breeders or a successor of one of those breeders shall not make an application for Plant Breeders' Rights with respect to that variety otherwise than jointly with, or with the consent in writing of, the other person, or each other person, entitled to make an application for those rights.

- 5) In the case of both public-financed and private institutions, the application can be made in the name of the institution.

### **33. Restrictions to Plant Breeders' Rights**

- 1) Where the Government considers it necessary in the public interest, the Plant Breeders' Rights in respect of a new variety shall be subject to conditions restricting the realization of those rights. These restrictions may be imposed, *inter alia*:
  - a) where problems with competitive practices of the rights holder are identified;
  - b) where food security or nutritional or health needs are adversely affected;
  - c) where a high proportion of the plant variety offered for sale is being imported;
  - d) where the requirements of the farming community for propagating material of a particular variety are not met; and
  - e) where it is considered important to promote public interest for socio-economic reasons and for developing indigenous and other technologies.
- 2) Where restrictions are imposed on Plant Breeders' Rights:
  - a) the grantee shall be given a copy of the instrument setting out the conditions of the restriction;
  - b) a public notice shall be given;
  - c) the compensation to be awarded to the holder of the rights shall be specified;
  - d) the rights holder may appeal the compensation award.
- 3) In particular, and without prejudice to the generality of the foregoing provisions, the relevant Government authority shall have the right to convert the exclusive Plant Breeders' Rights granted under this Act to non-exclusive Plant Breeders' Rights (compulsory licence of right).

### **34. Duration of Plant Breeders' Rights.**

Subject to this Act, Plant Breeders' Rights in respect of a plant variety shall exist for a period of 20 years in the case of annual crops and 25 years in the case of trees, vines and other perennials, commencing on the day on which the successful application for Plant Breeders' Rights with respect to the plant variety was accepted.

### **35. Dispute Settlement.**

Where conflicts arise regarding whether a plant variety qualifies as a new plant variety under the Act, they will be handled administratively through the National Competent Authority, an ad hoc tribunal and finally a court of law.

### **36. Infringements of Plant Breeders' Rights.**

- 1) An action or proceedings for an infringement of Plant Breeders' Rights may be instituted in writing in a court or, if agreeable to both parties, it may be submitted to a binding arbitration.
- 2) A defendant in an action or proceeding for an infringement of Plant Breeders' Rights in respect of a variety may apply by way of counter-claim for the revocation of those Plant Breeders' Rights:
  - a) on the grounds that the variety was not a new plant variety;
  - b) on the grounds that facts exist that, if known to the National Competent Authority before the grant of those Plant Breeders' Rights, would have resulted in the refusal of the grant.
- 3) If, in an action or proceedings for an infringement of Plant Breeders' Rights with respect to a plant variety in which a defendant has applied by way of counterclaim for revocation on the grounds referred to in paragraph 2(a) or 2(b), the court is satisfied that the grounds exist, the court may revoke those Plant Breeders' Rights.
- 4) Where, in an action or proceedings for an infringement of Plant Breeders' Rights, the court, on an application by the defendant by way of counterclaim, revokes the Plant Breeders' Rights, the court shall order the defendant to serve on the National Competent Authority a copy of the order revoking those Plant Breeders' Rights.

### **37. National Competent Authority.**

The State shall designate or establish a National Competent Authority that shall implement and enforce the provisions on Plant Breeders' Rights in this Act.

### **38. Registration of Plant Breeders' Rights.**

The National Competent Authority shall:

- a) receive and examine applications for the registration of Plant Breeders' Rights;
- b) carry out the required trials for testing the applicant's variety;
- c) register and issue certificates for Plant Breeders' Rights;
- d) publish applications for Plant Breeders' Rights in the Official Gazette;
- e) hear opposition on the registration of any Plant Breeders' Rights;
- f) maintain the Register for Plant Breeders' Rights.

### **39. Register of Plant Breeders' Rights.**

The National Competent Authority shall keep a National Register of Plant Breeders' Rights in which shall be entered particulars required by this Act or regulations.

### **40. Plant Genetic Resources Centres.**

The Government shall declare or gazette specified plant genetic resources centre(s) as suitable centre(s) for storage and maintenance of germplasm material for the purpose of this Act.

### **41. Filing of Applications.**

- 1) Where an application is filed in respect of Plant Breeders' Rights:
  - a) the application is accepted if the National Competent Authority is satisfied that:
    - i) the application complies with the requirements of Article 29; and
    - ii) the specified fees have been paid; or
  - b) the application is rejected if the National Competent Authority is satisfied that it does not fulfil the prescribed requirements.
- 2) Where the National Competent Authority accepts an application it shall, within 30 days after accepting the application, give written notice to the applicant stating that the application has been accepted, and it shall give public notice of the application.
- 3) Where the National Competent Authority rejects an application, it shall, within 30 days after rejecting the application, give written notice to the applicant stating that the application has been rejected and stating the grounds for rejection.

### **42. Uniform Testing and Assessment Procedures.**

- 1) On the acceptance of an application, the National Competent Authority shall stipulate the quantity of seed/planting material that should be made available by the applicant for trials and testing.
- 2) The National Competent Authority shall arrange to get statistically valid trials conducted to evaluate the suitability of the variety for national release.
- 3) The assessment criteria shall include important economic, physiological, ecological and nutritive quality attributes.
- 4) The fees with respect to a Plant Breeders' Rights shall be fixed on the basis of the administrative and examination costs incurred.

### **43. Characteristics of Plant Varieties Originating from Outside the Country.**

For the purpose of this Act, where a plant variety with respect to which an application has been accepted has originated from outside the country, the variety shall not be taken to have a particular characteristic unless:

- a) statistically valid, multi-locational variety trials carried out in the country for at least three growing seasons have demonstrated that the variety has the specific characteristic as claimed by the applicant; or
- b) an exceptional crisis in food production so requires and the National Competent Authority is satisfied that:
  - i) statistically valid trials on the variety carried out outside the country have demonstrated that the variety has that specified characteristic; and

- ii) the natural environment outside the country under which the statistically valid trials were carried is similar to the environment in the country.

#### **44. Plant Varieties Trials.**

- 1) Where, in dealing with an application with respect to a plant variety, the National Competent Authority considers it necessary that there should be a statistically valid trial or a further statistically valid trial of the variety, trials shall be carried out:
  - a) for the purpose of determining whether the plant variety is distinct, homogeneous or stable;
  - b) for the purpose of determining whether the variety will, if grown in the country, exhibit the claimed distinctiveness, homogeneity and stability;
  - c) requiring the applicant to supply sufficient seed or propagation material of the variety, as the case requires, and with any necessary information, to enable the variety to be test grown for the purpose so specified.
- 2) After the completion of the trials on a plant variety, any plants or propagation material of plants used in, or resulting from, the trials that are capable of being transported shall be removed by the applicant for Plant Breeders' Rights with respect to that plant variety.

#### **45. Withdrawal of Application**

- 1) An application may be withdrawn by the applicant at any time before the publication of the application.
- 2) Where an application is withdrawn after its publication in the Official Gazette, but before the granting of Plant Breeders' Rights, the National Competent Authority shall forthwith publicize that withdrawal.

#### **46. Provisional Protection.**

- 1) Where an application for Plant Breeders' Rights with respect to a plant variety has been accepted, the applicant shall be deemed to be the owner of Plant Breeders' Rights with respect to that plant variety during the period commencing on the date of filing of the application and ending on whichever of the dates specified in (a) and (b) occurs first:
  - a) when the application is disposed of; or,
  - b) where the National Competent Authority has given the applicant a notice at the expiration of the prescribed period, after the notice is given.
- 2) Steps to protect genetic materials of new varieties under testing will be taken so as to prevent their use for non-research purposes.

#### **47. Opposition to Grant of Plant Breeders' Rights.**

- 1) Where official gazettelement of an application for Plant Breeders' Rights with respect to a plant variety or to the variation of such a variety is given, any person who considers that:
  - a) commercial or public interests would be negatively affected by the grant of those rights to the applicant;
  - b) the application in relation to that variety does not fulfil the prescribed criteria for granting Plant Breeders' Rights; may, within 6 months after publication of the application, or any further time before the application is disposed of, lodge with the National Competent Authority a written objection to the granting of the Rights setting out the particulars of the objection.
- 2) Where an opposition to the grant of Plant Breeders' Rights is lodged under paragraph 1), the National Competent Authority shall cause a copy of that opposition to be given to the applicant for those Plant Breeders' Rights.
- 3) Any person may inspect an application, or an opposition lodged, at any reasonable time and is entitled, upon payment of such fee as is prescribed, to be given a copy of the application or of the opposition.

#### **48. Grant of Plant Breeders' Rights.**

- 1) Subject to this Article, an application for Plant Breeders' Rights in respect of a plant variety is granted if the National Competent Authority is satisfied that:
  - i) there is such a plant variety;

- ii) the plant variety is a new plant variety;
  - iii) the applicant is entitled to the application;
  - iv) the grant of those rights to the applicant is not prohibited by this Act;
  - v) those rights have not been granted to another person;
  - vi) there has been no earlier application for those rights that has not been withdrawn or otherwise disposed of; and
  - vii) all fees payable under this Act in relation to the application have been paid.
- 2) If the National Competent Authority is not satisfied that the conditions in paragraph 1) above have been fulfilled, the National Competent Authority shall refuse to grant those Plant Breeders' Rights to the applicant.
  - 3) The National Competent Authority shall not grant, or refuse to grant, Plant Breeders' Rights in respect of a plant variety unless a period of six (6) months has elapsed since the publication of the application in the official gazette, or, if the application has been varied in a manner that the National Competent Authority considers to be significant, a period of 6 months has elapsed since the publication of particulars of the variation, or of the last such variation, as the case requires.
  - 4) The National Competent Authority shall not refuse to grant Plant Breeders' Rights unless it has given the applicant for those Plant Breeders' Rights a reasonable opportunity to make a written submission in relation to the application.
  - 5) Where an opposition to the grant of Plant Breeders' Rights has been lodged, the National Competent Authority shall not grant the Plant Breeders' Rights unless it has given the person who lodged the opposition a reasonable opportunity to make a written submission in relation to the objection.
  - 6) Plant Breeders' Rights shall be granted and issued by the National Competent Authority to the applicant in the form specified in its regulations.
  - 7) Where Plant Breeders' Rights over one variety are granted to persons, those Plant Breeders' Rights shall be granted to those persons jointly.
  - 8) Where Plant Breeders' Rights are granted to a public or private institution, they shall accrue to the institution represented by the designated person or persons.
  - 9) Where the National Competent Authority refuses to grant Plant Breeders' Rights in respect of a plant variety, the National Competent Authority shall, within 30 days after refusing, give written notice of the refusal to the applicant clearly setting out the grounds for the refusal.

#### **49. Entry of Plant Breeders' Rights in the Register.**

- 1) When the National Competent Authority grants Plant Breeders' Rights with respect to a plant variety, it shall enter in the Register:
  - a) a description, or a description and photograph, of the plant variety;
  - b) the name of the variety;
  - c) the pedigree of the variety (where possible);
  - d) the name of the grantee;
  - e) the name and address of the breeder;
  - f) the address for the service of documents on the grantee for the purpose of this Act, which is shown on the application for the Rights;
  - g) the date on which the Plant Breeders' Rights were granted;
  - h) a description of the communities/localities in the country entitled to Farmers' Rights in relation to the variety;
  - i) such other particulars relating to the grant as the National Competent Authority considers appropriate.

#### **50. Publication of Grant of Plant Breeders' Rights.**

Where Plant Breeders' Rights have been granted, the National Competent Authority shall, within 30 days after granting, publish those Plant Breeders' Rights in the official gazette. The publication will also make reference to the entitlements under Farmers' Rights.

#### **51. Effect of Grant on Certain Persons.**

- 1) Where Plant Breeders' Rights in respect of a plant variety have been granted to a person, another person who was entitled to make an application for those Plant Breeders' Rights,



whether or not a person who developed that variety independently of the breeder, or the successor of such another person, is not entitled to any interest in those Plant Breeders' Rights because of the entitlement to make the application or because of the grounds of the entitlement, but nothing in this Article prevents a person from applying to the National Competent Authority for the revocation of those Plant Breeders' Rights or from instituting proceedings before a court in respect of those Plant Breeders' Rights.

2) Where:

- a) Plant Breeders' Rights with respect to a new plant variety have been granted to a person, and
- b) another person (in this paragraph referred to as the "eligible person") was entitled, at a law or in equity, to have the right to make an application for those Plant Breeders' Rights assigned to the eligible person, then the eligible person is entitled to have those Plant Breeders' Rights assigned to her/him.

## **52. Nature of Plant Breeders' Rights.**

- 1) Plant Breeders' Rights are personal property and, subject to any conditions imposed under other paragraphs, can be assigned or transmitted by will or by operation of law.
- 2) An assignment of Plant Breeders' Rights does not have effect unless it is in writing, signed by or on behalf of the assignor.

## **53. Assignment of Plant Breeders' Rights.**

- 1) Where Plant Breeders' Rights are assigned or transmitted to a person, that person shall, within 30 days after acquiring them, inform the National Competent Authority in writing that the person has acquired those Plant Breeders' Rights, giving particulars of the manner in which they were acquired, and the National Competent Authority, if satisfied that the Plant Breeders' Rights have been so assigned or transmitted, shall enter the name of that person on the Register as the grantee of those Plant Breeders' Rights.
- 2) Where, in accordance with paragraph 1), the National Competent Authority enters on the Register as the grantee of Plant Breeders' Rights the name of a person who claims to have acquired those Plant Breeders' Rights, it shall, within 30 days after entering the name in the Register, give written notice to the person newly entered and to the person who was the grantee before the new entry was made stating that the entry has been made.
- 3) Where the National Competent Authority is not satisfied that Plant Breeders' Rights have been assigned or transmitted to a person who has informed the National Competent Authority in accordance with paragraph 1) that those Plant Breeders' Rights have been thus assigned or transmitted to the claimant, the National Competent Authority shall forthwith:
  - a) give written notice to the claimant:
    - i) stating that the National Competent Authority is not satisfied; and
    - ii) setting out the grounds on which the National Competent Authority is not so satisfied; and
  - b) give written notice to the grantee of those rights:
    - i) setting out particulars of the information given by the claimant;
    - ii) stating that the National Competent Authority is not satisfied; and
    - iii) setting out the grounds on which it is not so satisfied.
- 4) A person who informs the National Competent Authority in accordance with paragraph 1) that Plant Breeders' Rights have been assigned or transmitted to her/him shall give written notice to the National Competent Authority of an address in the country for the service of documents in accordance with this Act; and
  - a) where the National Competent Authority enters the name of that person on the Register in accordance with paragraph 1) and that address is different from the address already entered in the Register, it shall amend the Register so that the address so given is entered in the Register as the address for service of documents on the grantee for the purpose of this Act; or
  - b) where the National Competent Authority is not satisfied that those rights have been assigned or transmitted to that person, the notice to that person under paragraph 3(a) shall be given by being posted.



**54. Supply of Propagating Material.**

- 1) Plant Breeders' Rights in respect of a plant variety are subject to the condition that the grantee of the Rights shall comply with any notice given to her/him by the National Competent Authority.
- 2) Where Plant Breeders' Rights are granted with respect to a plant variety, the National Competent Authority may give the grantee of the Plant Breeders' Rights written notice requiring the grantee, within 14 days of the giving of the notice or any other time that is allowed, to cause a specified quantity of propagating material of that variety to be delivered, at the expense of the grantee, to a specified plant genetic resources centre and a herbarium.
- 3) The quantity of the propagating material of a variety specified in a notice under paragraph 2) shall be the quantity that the National Competent Authority considers would be sufficient to enable that variety to be kept in existence if there were no other propagating material of that variety.
- 4) Where the propagating material is delivered to a plant genetic resources centre in accordance with the conditions imposed on Plant Breeders' Rights by paragraph 1), the National Competent Authority shall, subject to paragraph 6), cause that material to be stored at a specified plant genetic resources centre.
- 5) The delivery and storing of the propagating material in accordance with this paragraph does not affect the ownership of the material but that the material shall not be dealt with otherwise than for the purposes of this Act.
- 6) The propagating material stored at a plant genetic resources centre may be used by the National Competent Authority for the purposes set out in this Act.
- 7) Without limiting paragraphs 5) and 6), where the propagating material is stored at a plant genetic resources centre as gazetted by the Government according to Article 39 of this Act, the material shall not form part of the national collection, and shall not be used for the purposes of that collection, until a decision on the application for Plant Breeders' Rights is taken. Once the variety is accorded recognition, the propagating material can be provided for purposes of further research and breeding under the intimation of the depositor of the material.

**55. Revocation of Plant Breeders' Rights.**

- 1) The National Competent Authority shall revoke Plant Breeders' Rights in respect of a plant variety if: a) it is satisfied that the plant variety was not new or that acts exist which, if known before the grant of the Plant Breeders' Rights, would have resulted in the refusal of the grant; or b) the grantee has failed to pay a prescribed fee payable in respect of those Plant Breeders' Rights within 90 days after having been notified that the prescribed fee was due for payment.
- 2) The National Competent Authority may revoke Plant Breeders' Rights if it is satisfied that: a) the grantee has failed to comply, in relation to those Plant Breeders' Rights, with the prescribed conditions; or b) a person to whom those Plant Breeders' Rights have been assigned or transmitted has failed to comply with the provisions of this Act.
- 3) Where the National Competent Authority revokes Plant Breeders' Rights in respect of a plant variety in accordance with this Article, it shall, within 7 days after the decision is taken, give written notice of the revocation to the grantee setting out the grounds for the revocation.
- 4) The National Competent Authority shall not revoke Plant Breeders' Rights in accordance with this Article unless and until it has given the grantee and any person to whom it believes that Plant Breeders' Rights have been assigned or transmitted, particulars of the grounds for the proposed revocation and given the grantee and any such person a reasonable opportunity to make a written submission in relation to the proposed revocation.
- 5) The revocation of Plant Breeders' Rights with respect to a plant variety in accordance with this Article takes effect: a) subject to paragraph 4), at the expiration of the period within which an application may be made to a court for a review of the revocation; or b) if such an application is made to the court, at the time when the application is withdrawn or finally determined by a court.
- 6) Nothing in this Article shall be taken to affect the powers or the legal system.

- 7) Any person whose interests are affected by the granting of Plant Breeders' Rights with respect to a plant variety may apply to the National Competent Authority for the revocation of those Plant Breeders' Rights in accordance with this section.
- 8) The National Competent Authority shall consider any application under paragraph 7) for the revocation of Plant Breeders' Rights. The decision of the National Competent Authority not to revoke the Plant Breeders' Rights shall be communicated to the applicant by a written notice within 7 days after the decision is taken, setting out the grounds for the decision.

#### **56. Surrender of Plant Breeders' Rights.**

- 1) Subject to paragraph 2) of Article 34, a grantee of Plant Breeders' Rights may at any time, by giving notice to the National Competent Authority, offer to surrender those Plant Breeders' Rights: the National Competent Authority, after giving public notice of the offer and giving all interested parties an opportunity to make a written submission in relation to the offer, may, if it finds fit, accept the offer and revoke those rights.
- 2) Where an action or proceeding in respect of Plant Breeders' Rights is pending in a court, the National Competent Authority shall not accept an offer for the surrender of, or revoke, those Plant Breeders' Rights, except by leave of the court or by consent of the parties to the action or proceeding.

### **PART VII. Institutional arrangements**

#### **57. Establishment of the National Competent Authority.**

The State shall designate or establish a National Competent Authority that shall implement and enforce the provisions of this legislation. Its duties shall include those set out in Article 29.

#### **58. Duties of the National Competent Authority.**

The duties of the National Competent Authority are, while ensuring gender equity, to:

- i) create and operate a regulatory mechanism that will ensure effective protection of Community Intellectual Rights and Farmers' Rights, and the regulation of access to biological resources;
- ii) carry out the process of consultation with and participation of local communities, including farming communities, in the identification of their rights as provided for under the customary practices and laws of the communities;
- iii) identify types of Community Intellectual Rights and Farmers' Rights;
- iv) identify and define the requirements and procedures necessary for the recognition of Community Intellectual Rights and Farmers' Rights;
- v) develop criteria and mechanisms to standardize procedures;
- vi) develop a system of registration of items protected by Community Intellectual Rights and Farmers' Rights according to their customary practices and law;
- vii) issue licenses for the exploitation and commercialization of biological resources, including protected species, varieties or lineages, and community innovations, practices, knowledge and technologies;
- viii) identify relevant technical institutions that will assist local communities, including farming communities, in the categorization and characterization of their biological resources, innovations, practices, knowledge and technologies.

#### **59. Establishment of National Inter-Sectoral Coordination Body.**

A National Inter-Sectoral Coordination Body at the highest level, composed of representatives from relevant public sectors, scientific and professional organizations, and non-governmental and local community organizations, shall be created as a body to coordinate and follow up the proper implementation of this legislation by the National Competent Authority.

#### **60. Functions of the National Inter-Sectoral Coordination Body.**

The functions of the National Inter-Sectoral Coordination Body shall be to:

- i) ensure that the minimum conditions for agreements with collectors are strictly observed and complied with;
- ii) ensure that the rights of local communities, including farming communities, are protected, with due regard for gender equity, wherever the activities relating to the accessing, collection or research on biological resources, community innovations, practices, knowledge and technologies are conducted, including verifying that the requirements of prior informed consent by the local communities are complied with;
- iii) recommend policies and laws on the sustainable use of biological resources including new laws on intellectual property rights, Community Intellectual Rights and Farmers' Rights over their biological resources, innovations, practices, knowledge and technologies; and
- iv) perform such other functions as may be necessary for the effective implementation of this legislation.

#### **61. Composition of the National Inter-Sectoral Coordination Body.**

The National Inter-Sectoral Coordination Body shall be composed of the following persons: Here the functional composition of the body can be outlined, the qualifications, fields of expertise or specialization, public interest qualities, industry, community-based organizations and persons from relevant areas and fields with due regard for gender equity. This section seeks to fulfil the requirements set out in Article 29 above.

#### **62. Appointment of Technical Advisory Body.**

A body to be known as the Technical Advisory Body is hereby appointed to support the work of the National Inter-Sectoral Coordination Body.

#### **63. Functions of the Technical Advisory Body.**

The functions of the Technical Advisory Body shall be to:

- i) formulate policy options that promote the protection of Community Intellectual Rights, Farmers' Rights and gender equity and the regulation of access to biological resources;
- ii) prepare lists of taxa threatened by deterioration and/or extinction and of places threatened by serious loss of biological diversity;
- iii) monitor and evaluate, at regular intervals, the implementation of this legislation or actual or potential threats to biological diversity and the likely impacts on the pursuit towards sustainable development;
- iv) develop and recommend a mechanism to enable the identification and dissemination of information regarding threats to biological resources; and
- v) perform such other functions as may be necessary to implement this legislation.

#### **64. Establishment of a National Information System.**

- 1) It is hereby established that there shall be a National Information System with regard to biological resources, which includes the activities set out in the following Article.
- 2) Local communities may also establish databases on their biological resources together with their components and derivatives, and the knowledge and technologies of those communities.
- 3) Access to information in the National Information System and databases shall be regulated by a charter setting out the rights of the owners of the data.

#### **65. Activities of the National Information System.**

The activities of the National Information System shall include *inter alia* the following:

- i) the compilation and documentation of information on Community Intellectual Rights, Farmers' Rights, gender equity and access to biological resources, and community innovations, practices, knowledge and technologies;
- ii) the maintenance of an up-to-date system of information about research and development activities on biological resources and community innovations, practices, knowledge and technologies; and
- iii) the compilation of information on piracy of biological resources, community innovations, practices, knowledge and technologies, and the disseminating of this information to all relevant and concerned bodies.

## **66. Establishment of a Community Gene Fund**

- 1) The Community Gene Fund shall be established as an autonomous Trust. A Director shall be appointed to administer the Fund. The Director shall report to the National Competent Authority.
- 2) There shall be an autonomous Trust to administer a Community Gene Fund. This Trust shall derive its funds from the shares due to local farming communities under Article 27.1(b) in Part V on Farmers' Rights. The Fund, which will be exempted from income tax, can receive contributions from national and international bodies and others interested in strengthening genetic conservation by local communities.
- 3) A royalty to be fixed by the National Competent Authority based on the gross value of the breeders' rights protected seeds sold shall be credited to the Community Gene Fund for the benefit of farming communities whose farmers' varieties have been the basis for the breeding of breeders' varieties.
- 4) The gene fund shall be used to finance projects developed by the farming communities, ensuring equity for women, with or without the participation of experts to help them, aimed at solving their felt problems, including, but not restricted to, the development, conservation and sustainable use of agricultural genetic resources.
- 5) All salaries and administrative expenses relating to the establishment and administration of the Community Gene Fund will be met by the Government, in order to ensure that the entire proceeds of the Fund go to the local farming communities.
- 6) The Community Gene Fund will have a Fund Management Committee comprising representatives of farming local communities, professionals, non-governmental organizations, and the public and private sectors.

## **PART VIII. Enabling provisions**

### **67. Sanctions and Penalties.**

- 1) Without prejudice to the existing agencies and authorities, the State shall establish appropriate agencies with the power to ensure compliance with the provisions of this law.
- 2) Without prejudice to the exercise of civil and penal actions that may arise from violations of the provisions of this legislation and subsequent regulations, sanctions and penalties to be provided may include:
  - i) written warning;
  - ii) fines;
  - iii) automatic cancellation/revocation of the permission for access;
  - iv) confiscation of collected biological specimens and equipment;
  - v) permanent ban from access to biological resources, community knowledge and technologies in the country.
- 3) The violation committed shall be publicized in the national and international media and shall be reported by the National Competent Authority to the secretariats of relevant international agreements and regional bodies.
- 4) When the collector conducts her/his operations outside of the national jurisdiction, any alleged violations by such a collector may be prosecuted through the cooperation of the government under whose jurisdiction the collector operates based on the guarantee that the latter has provided.

### **68. Appeals.**

Decisions on approval, disapproval or cancellation of agreements regarding access to biological resources, community knowledge or technologies may be appealed through appropriate administrative channels. Recourse to the courts shall be allowed after exhaustion of all administrative remedies.

## **Notes**

<sup>1</sup> This text was received from Prof. J.A. Ekpere and has been edited and formatted by UNCTAD, Geneva.