Preserving, Protecting and Promoting Traditional Knowledge: National Actions and International Dimensions

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I. Introduction

Traditional knowledge[2] (TK) has received increasing attention on the international agenda over the past decade. This is due to a number of factors, including the recognition of its 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 or inappropriate patenting or use of TK with little or no benefit sharing with the original TK-holders; interest in harnessing the potential of TK for local sustainable development; and increasing attention to indigenous rights.

Many countries and communities worldwide are currently grappling with how to best address this issue at national, regional and international levels. As 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 from its own perspective and within its own area of competence and expertise. This is useful and necessary. However, focusing on one part of the *problematique* and ignoring all the other aspects runs the risk of yielding a patchwork of particular solutions that in the end do not fit seamlessly together, and may in some cases partially or wholly cancel out each others' well-intended effect. There is need, therefore, for a holistic approach[3].

This paper will briefly touch upon the international TK debate, focusing on concerns raised in the context of the WTO and calls for international protection of TK. The bulk of the paper, however, is focused on outlining a menu of possible elements of holistic national *sui generis* systems for the preservation, protection and promotion of traditional knowledge. 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.

II. 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). It is also addressed in arenas related to the rights of indigenous peoples (International Labour Organization, United Nations Commission on Human Rights, United Nations Permanent Forum on Indigenous

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[2] 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)

[3] 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.

Issues), intellectual property (World Intellectual Property Organization, WIPO) and culture (United Nations Educational, Scientific and Cultural Organization). More recently, TK has become a topic of discussion in trade-related forums such as the World Trade Organization (WTO) and the United Nations Conference on Trade and Development (UNCTAD).

As TK is a very complex issue, each forum allows focus on a particular facet. However, there are some risks 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 (IPRs) 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 held an Expert Meeting[4] on TK in 2000, but has no intergovernmental body regularly addressing the issue.

TK in the WTO

The Ministerial Declaration of the WTO's fourth Ministerial Conference (Doha, 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 % of patents are in developed countries, and a large proportion of the 5% in developing countries is held by developed country companies. Developing countries, on the other hand, are well endowed with TK. The nature of this knowledge --i.e. it is often held collectively, passed down orally from generation to generation, etc. --make 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, whereas that predominant in developing countries is not.

Moreover, there are concerns that the genetic resources and traditional knowledge 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

[4] The UNCTAD *Expert Meeting on Systems and National Experiences for Protecting Traditional Knowledge, Innovations and Practices* was held in Geneva 30 October - 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 harnessing 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 Web site at www.unctad.org.

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[5].

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 shall provide, as a condition to acquiring patent rights, (i) disclosure of the source and country of origin of the biological resource and of the traditional knowledge used in the invention; (ii) evidence of prior informed consent through approval of authorities under the relevant national regimes; and (iii) 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 facilitate benefit sharing[6]. 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 prior art[7].

But these defensive measures would not prevent biological resources or TK from being inappropriately acquired, used commercially, but just not patented. It would also 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*[8] 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[9].

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[10], and in the submission by Brazil on behalf of a group of developing countries to TRIPS Council in June 2002[11].

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[5] See, for example, the outcome of UNCTAD's Expert Meeting, (TD/B/COM.1/EM.13/3), and numerous interventions and submissions in CBD, WTO and WIPO.

[6] In Decision VI/24, part C, the sixth Conference of the Parties of the CBD (April 2002), invited Parties and Governments to encourage the disclosure of origin of genetic resources and traditional knowledge in relevant applications for IPRs. (See UNEP/CBD/COP/6/20). It is also worth noting that for the fifth session of the IGC, the WIPO secretariat prepared a draft technical study on disclosure requirements (WIPO/GRTKF/IC/5/10).

[7] 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 would know the source of origin of the material he used and could provide evidence of PIC and benefit-sharing, if in fact he 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) with a smaller burden on patent office examiners to also search the databases made available to them.

[8] 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.

[9] There is need for further work on what such an international framework could look like.

[10] Please see the *Report of the International Seminar on Systems for the Protection and Commercialization of Traditional Knowledge*, organized by the Government of India and UNCTAD (New Delhi, 3-5 April 2002), available on the UNCTAD Web site at www.unctad.org/trade_env.

[11] *The Relationship Between the TRIPS Agreement and the Convention on Biological Diversity and the*

III. 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 upon which most countries could agree). Countries may wish, therefore, to develop national TK protection systems that are tailored to their specific circumstances and prioirities. Such systems may be referred to as *sui generis* systems for the protection of TK.

A) 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 which 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 TK shared by several communities or tribes? If so, what is the relationship between these groups?
- How is TK transmitted among TK-holders and inter-generationally?
- 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 TK documentation efforts have been made?
- 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 impacting 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, IP, indigenous rights, human rights, etc. 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.

Protection of Traditional Knowledge, submitted by Brazil on behalf of the delegations of Brazil, China, Cuba, Dominican Republic, Ecuador, India, Pakistan, Thailand, Venezuela, Zambia and Zimbabwe, June 2002, (IP/C/W/356).

B) Objectives

A next step is share the assessment findings with a wider group of stakeholders and to try to reach a common and clear understanding of the main objectives which 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[12]. 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 could be employed. There is of course some overlap, with some tools being useful for more than one objective. And 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 could be best. This could clash with intellectual property protection, which would restrict the wider use of TK. These interconnections between the various facets of the TK *problematique* underline the importance of taking a **holistic** approach to the development of *sui generis* systems for TK.

C) Tools

The following text sets out some possible tools which could be used for each of the three broad categories of objectives outlined above: preservation, protection and promotion. The list is not exhaustive, but intended to serve as a starting point for future research and discussion and eventually national multi-stakeholder policy dialogues[13].

1) Preservation

TK is currently being lost at an alarming rate[14]. To preserve TK, there are a number of measures which could be taken. First, it would be important to understand the root causes in each country of the TK loss. Often this is due to destruction of the natural environment, which in turn disturbs and even destroys the indigenous and local communities embodying

[12] There may of course be some objectives which do not fall easily into these categories or which deserve deeper consideration all by themselves. There may also be some objectives, such as equity and benefit-sharing, which fall into all three of the categories.

[13] When discussing these different options, resource implications must always be bourne in mind.

[14] For example, it is estimated that in the next 100 years, 90% of the worlds' languages, which are carriers of culture and TK, will become extinct. For further information, please see Gonzalo Oviedo, Aimée Gonzales and Luisa Maffi (2002), "Importance of Traditional Ecological Knowledge and Ways to Protect It", on the UNCTAD Web site at www.unctad.org/trade_env.

traditional lifestyles who are the main holders of the TK. Recognizing the rights of these communities to their traditional lands could help retard this detrimental trend. Often such communities start to decline due 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. For this, raising awareness of the value of TK and of their cultural heritage may help.

The above measures are aimed at enhancing "in situ" preservation, i.e. 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 which it seems likely to be lost in the near future. However, TK registries might 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 on this needs to be gathered.

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 having access governed in line with customary access rights to the knowledge might 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 allows 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 another. The database is actually distributed among the different communities of the Tribe, thus giving full local control.

2) Protection

Another set of policy objectives aim to prevent the unauthorized or misappropriate use of TK by third parties. This includes unauthorized commercial use as well as applications for intellectual property rights which are based upon TK, but without the prior informed consent (PIC) of the TK-holders and without benefit sharing[15].

IP Protection can be divided into defensive, i.e. preventing others from filing IPRs on your TK, or positive, i.e. establishing IPRs on your TK, with the possibility therefore of preventing others from using the TK without your permission.

For both types of protection, there have been some cases where TK-holders have been able to use conventional IPR instruments to protect their TK[16]. However, since these instruments were not developed with TK in mind, but rather modern industrial IP, the fit is not always perfect.

[15] For example, there are a number of cases where medicinal plants used by local and indigenous communities attracted the interest of researchers and pharmaceutical companies, resulting in a well-selling patented drugs. The communities have rarely gotten any benefits in return.

[16] 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.

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

i) Defensive IP protection

A main tool for the defensive protection is requiring in relevant patent applications disclosure of source of origin 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 mentioned above, it has also been repeatedly proposed by developing countries at the international level to include this in the TRIPS Agreement. Such a measure would facilitate tracebility and benefit sharing.

For TK clearly in the public domain (such as Ayurvedic texts), making this information available to patent examiners around the world in an easily searchable format, such as a database, could help them to 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 around the definition of public domain and also what to do about TK that might have been put into the public domain without the PIC of the original TK-holders.

ii) Positive IP protection

Bad patents are only one piece of the puzzle. Many TK-holding communities complain that their knowledge and cultural heritage is treated as common property and free for the commercial use of 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 would be a declaration of the rights of indigenous and local communities, including their ownership of their TK.

Another tool for this 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, may work well. However, beyond the communities, the laws have little effect, unless it is 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 than for which it was originally intended is another tool which could be further explored. Such a tort exists, for example, in the United States.

Another possible tool would be 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.

3) Promotion

The promotion of TK relates broadly to the harnessing of TK for trade and development. There are several objectives which could be included under this framework: promoting the use and further development of TK systems and TK-based innovations; promoting appropriate and sustainable commercialization; and ensuring that a fair and equitable share of 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 which can strengthen and further develop this knowledge base upon which they 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 this 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 led to some new ideas and solutions to common problems[17]. 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 to promote the integration of TK into national development strategies and development projects[18]. Involving TK-holders from 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, etc. Often, the local TK can be leveraged by global knowledge for increased project effectiveness and sustainability[19].

Several papers presented at UNCTAD's Expert Meeting on Traditional Knowledge 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 landraces that were particularly well suited to the climatic conditions in Ethiopia and outperformed "green revolution" varieties. Several countries have noted positive experiences in having traditional healers present in hospitals and interacting with medical staff. The importance of government pro-activity was also emphasized.[20]

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[17] See Nicolas Gorjestani (2001), "Indigenous Knowledge for Development: Opportunities and Challenges", available under "meetings" on UNCTAD's Website at www.unctad.org/trade_env.

[18] For more information, see Alan Emery (2000), *Integrating Indigenous Knowledge in Project Planning and Implementation*, KIVU Nature Inc., Canada. Also available from the IK Programme of the World Bank.

[19] Gorjestani, *Op. Cit.*.

[20] See for example the papers by Tesfahun Fenta (Ethiopia), Le Quy An (Viet Nam), Dakuyo Zehirin (Burkina Faso), Paul Mhame (Tanzania) presented at *UNCTAD's Expert Meeting on Systems and National Experiences*

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 itself. China has developed specific legislation for patenting new traditional medicines and herbal remedies. The use of this possibility has been growing rapidly[21].

TK registries may also play a role in promoting the use of TK, in a similar manner as they may promote its preservation. They could also be used for commercialization (dealt with below), to get an idea of commercial possibilities. Access to carefully-designed[22] registries could be governed by contractual obligations.

ii) Commercialization

Commercialization is a sensitive subject for some TK-holders. Many TK-holders are not so much interested in commercializing the TK themselves as to prevent the inappropriate commercial use of it by others (discussed above). 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 that would be interested in exploring commercialization, the first step is to decide which parts of their TK are off limits and which not. A next step would be the identification, within the latter category, TK that may have value in the market place. Potential customers could include those within the community, in local markets, people originally from the community that have now moved to the 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 either by third parties, with a share of benefits going to the communities, as a partnership between the communities and a third parties, or by the communities themselves. In general, the more involved the community is in developing, producing and selling the product, the larger share of the market value that will accrue to them. The more funds coming into a community, the more likely 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 this 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 micro-credit; assistance in identifying market opportunities, scaling up operations, marketing, and export;

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for the Protection of Traditional Knowledge, Innovations and Practices, available under "meetings" on UNCTAD's Website at www.unctad.org/trade_env.

[21] 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.

[22] For instance, a database for these purposes might indicate the general type of commercially interesting TK and the name of the TK-holder to contact to pursue things further.

promoting the formation of producers' associations to create economies of scale and also have more bargaining power in obtaining inputs at lower prices, etc. Partnerships with larger entities in the formal sector in the country or in foreign markets can play an important role[23].

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[24].

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 the wild resource and cultivation of medicinal plants) and measures relating to export promotion.

In some cases, conventional IPR instruments may increase the commercial value of the TK-derived products or help to protect successful products from unauthorized copying or use by third parties. This concerns, for example, the use of trademarks and geographical indications (GI). There may be certain areas where GIs could capture the traditions involved in making certain products. In this case, national IP offices could take steps to set up GI registers. However, it must be stressed that 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 which runs throughout 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. discloure 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 a bargaining power disparity problem.

Biodiversity-related TK could be specifically included in national policies and institutional arrangements on access to genetic resources and benefit sharing (ABS). The Convention on Biological Diversity stipulates that access to genetic resources should be based on prior informed consent (PIC) of the member State and mutually agreed terms (MAT) with benefit sharing. For TK associated with such resources, the national ABS regime could also stipulate that PIC of the TK-holding communities (where these can be clearly identified) should be

[23] For further information on these subjects, please refer to UNCTAD's body of work on promoting small and medium-sized enterprise development.

[24] 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).

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.

IV. Conclusion

The main part of this paper set out a possible initial approach that could be taken at the national level for countries interested in addressing TK issues. A suggested first step would be to assess the current TK-related situation in the country, including, for example, determining the main types of TK, who are the TK-holders, in what manner is the TK being used, what is the current policy and institutional framework, who are the main stakeholders and interested parties, etc. The next step could be to have a national multistakeholder policy dialogue (with full participation of TK-holders) 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 paper 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. The importance of a holistic approach was emphasized.

The paper also captured some of the concerns expressed at the international level regarding TK. It mentioned the many calls that have been made by developing countries and others for international TK protection, since national policies have limited effect beyond national borders. It highlighted two proposals in particular: the "defensive" proposal for requiring in relevant patent applications the disclosure of the source of origin of genetic resources and TK, as well as evidence of PIC and benefit sharing, and the "positive" proposal for a international framework that would recognize national and/or regional *sui generis* systems.

Further work is need on 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 *problematique* will lie in a combination of multi-faceted measures at national and international levels.