

# *Protecting Community Rights over Traditional Knowledge: Implications of Customary Laws and Practices*

## Interim Report (2005-2006)

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## Summary

### 1. Objectives and Approach

The *purpose* of this collaborative research project is to assist indigenous and local communities to protect their rights over traditional knowledge relating to biological resources, in accordance with their customary laws and practices. The *specific objectives* are:

- a) To undertake case studies in Peru, India, Kenya, China and Panama, to examine:
  - i) the customary laws and practices of indigenous and local communities relevant for controlling external use of TK; and
  - ii) the implications for the development of mechanisms to protect TK at local, national and international levels.
- b) To inform and influence policy makers (local, state and national authorities, the CBD, WIPO, WTO and UN Indigenous Rights fora).

Anticipated outcomes of the project include:

1. Improved understanding of alternative systems to existing IPR models, based on the livelihood needs, customary laws and values of indigenous and local communities.
2. Enhanced participation of TK holders in policy debate and formulation for TK protection at local, national and international level.
3. Enhanced capacity of TK holders to protect their rights, through the active participation of local communities in the research process and in developing tools for TK protection (eg. community protocols and registers).
4. Strengthened customary institutions and resource management systems, contributing to enhanced community control over resources.

The case studies focus on both agricultural resources (notably traditional rice, potatoes and maize varieties) and medicinal TK of different ethnic communities, in different ecological contexts (mountain, dryland, semi-arid and coastal forest), with communities ranging from quite traditional to more mixed/ integrated. A key criteria for selecting the case study sites was high levels of cultural and biological diversity and rich related TK. Those with a particular focus on medicinal TK are with the Maasai and Mijikenda in Kenya, Yanadi tribals in Chittor District, Andhra Pradesh, and Kuna and Embera-Wounan in Panama. The rest - Quechua communities in Peruvian Andes; Lepchas in the Eastern Himalayas; Adhivasis in Bastar, India; and Zhuang and Yao in Guagxi, Southwest China - focused mainly on traditional crop varieties (but also medicinal TK).

A number of practical tools for TK protection are being developed with communities:

- Community knowledge and biodiversity registers to help assert rights and promote TK use by communities (eg. Yanadi and China cases);
- Community protocols to establish conditions for access to TK (eg. the Kuna in Panama);
- An inter-community agreement for equitable benefit-sharing, linked to an agreement for reciprocal access to potatoes between the Potato Park, Peru, and the International Potato Centre (CIP)
- A Yanadi healers association; Kuna and Embera-Wounaan Healers Associations; and a farmers information network in the Himalayas.

## 1. Traditional knowledge and customary law systems

All of the study communities are affected by factors which are leading to cultural change and the loss of biodiversity and TK. These include the alienation of traditional territories for commercial use and protected areas, which restricts access to bio-resources and sacred sites; growing integration with western society and economy; and the extension of government control undermining customary authorities and values. These pressures have led to a decline in the interest of youth in traditional lifestyles and knowledge, and customary authorities and laws. In some cases, the last 1-2 decades have witnessed rapid decline in crop diversity, due to small land holdings and adoption of high yielding varieties. Where collective land tenure is secure, traditional governance still strong and communities are more remote, these change processes are less marked.

Customary laws include accepted norms of behaviour, practices and customs, as well as more rigorous rules which are enforced by traditional institutions (eg. elders), with sanctions or penalties attached. Customary institutions and laws play a central role in sustaining traditional lifestyles and TK, but are becoming weaker in many communities. For TK protection to be based on customary law, there needs to be a recognition of customary laws and authorities both by communities and governments. But even when recognised in national constitutions and statutes, customary laws are rarely recognised by the courts, as they are not written down and are viewed as subordinate to formal laws, particularly when there is a conflict between them.

Although customary laws vary widely between communities, underlying customary principles or values such as reciprocity, equilibrium, duality and brotherhood/solidarity are quite consistent across different ethnic groups. These principles give rise to the obligation to openly share bio-resources and TK; to reciprocate/ exchange equally; to maintain harmony in society; to help those in need; and to respect nature. Such principles could be useful for building common policy frameworks for TK protection at national and international level, as well as for developing local TK protection tools and ABS contracts.

Spiritual beliefs associated with TK and bio-resources are still strong in most of the cases, at least amongst the older generation. Since TK and bio-resources are believed to come from God, no person or group is allowed to claim private ownership of them. Hence IPRs which grant private rights go against customary laws. Ownership of TK and bio-resources and decision-making about them is often collective, with TK/seeds also shared with neighbouring communities. This means that Prior Informed Consent (PIC) and benefit-sharing should be done collectively at community or supra-community level, although individual rights may also be recognised. Some TK and bio-resources are considered sacred and kept secret, hence communities should have the right to deny access.

Customary laws and practices may include mechanisms for equitable distribution of wealth amongst communities which could be used to develop ABS agreements in order to maximise horizontal benefits for community welfare and minimise conflicts. However, in some cases cooperative norms are becoming weaker and there is a trend towards individual ownership as communities are becoming westernised and increasingly using TK for personal gain (eg. the Mijikenda). Here establishing representative organisations for PIC and collective protection systems may be more challenging.

Biodiversity resources, landscapes and culture all play a key role in sustaining TK. In order to stem the loss of TK, and reflect indigenous holistic worldviews, approaches to protect rights

over TK should also seek to protect rights over bio-resources, landscapes, culture and customary laws and institutions. The concept of 'Collective Bio-Cultural Heritage' integrates all these elements and thus provides a useful basis for developing holistic approaches to protect TK rights and also strengthen TK systems, livelihoods and biodiversity. This concept can be used to shape different responses at local level; and to provide a common framework for developing national and international policies.

## 2. Conclusions and Policy Recommendations

The main conclusions and policy recommendations from the project can be summarised as follows:

*1) Traditional Knowledge that sustains livelihoods and biodiversity is under serious threat*  
Traditional knowledge and crop varieties are essential for the food security, health, agriculture and cultural needs of indigenous and local communities, which include many of the poorest people in the world. Yet this knowledge is under increasing threat from intellectual property regimes and economic processes which undermine traditional livelihoods. The spread of IPR regimes is leading to increased patenting of traditional knowledge and bio-genetic resources of communities. This threatens livelihoods that rely on free access to these resources, and results in unfair exploitation of community resources without their consent or benefit-sharing ('biopiracy'). IPRs clash with sharing and commons values which sustain traditional livelihoods and biodiversity, and could eventually replace them with private property values. Furthermore TK is being rapidly lost due to economic globalisation, erosion of traditional culture and institutions, and alienation of traditional territories for commercial use and protected areas.

*2) Policy responses should be holistic and not focus narrowly on intellectual property*  
Most national and international policy makers are developing policies which focus narrowly on protecting the intellectual or intangible element of knowledge systems. However, such an approach is of limited benefit for traditional livelihoods, and does little to strengthen TK systems. In fact, by failing to recognise the holistic indigenous worldview, where the intangible and tangible components of heritage are inextricably linked, it risks undermining the indigenous values and beliefs that sustain TK and biodiversity. To be useful for traditional livelihoods and for tackling the loss of TK as well as its misappropriation, policy responses should not only focus on protecting rights to TK but also rights to associated bio-genetic resources, landscapes, cultural values and customary laws, all of which are vital for sustaining TK.

*3) Policy responses should protect 'Collective Bio-Cultural Heritage'*  
"Collective bio-cultural heritage" is defined as the: "*Knowledge, innovations and practices of indigenous and local communities which are often collectively held and are inextricably linked to traditional resources and territories, local economies, the diversity of genes, varieties, species and ecosystems, cultural and spiritual values, and customary laws shaped within the socio-ecological context of communities.*" Having emerged from a community context, this concept reflects the holistic worldview of indigenous peoples. It addresses biodiversity and culture together, rather than separating them; recognises collective as opposed to individual rights; and places them in the framework of 'heritage' as opposed to 'property'. It explicitly recognises that the heritage of indigenous peoples includes biological resources and traditional territories, and not only TK and culture.

*4) TK should be protected in situ as part of community cultures and territories*

At local level, the establishment of indigenous-managed Community Conserved Areas—or Indigenous Bio-Cultural Heritage Areas—offer a means to protect TK *in situ*, as part of indigenous culture and territories. Using this model, the protection of indigenous knowledge is achieved through: the recognition of collective land rights; the strengthening of community management of natural resources, biodiversity and knowledge based on customary laws and institutions; strengthening of cultural and spiritual values; and strengthening local economies and poverty reduction. Thus, protection of CBCH provides a means to address both the loss and misappropriation of TK through a system of community stewardship. It establishes not only rights, but also the *responsibility* of indigenous and local communities to conserve their heritage and transmit it to future generations.

*5) Policy responses should not be consistent with IPR standards*

IPRs are designed to protect commercial inventions and mostly grant individual and exclusive rights, whereas communities' traditional knowledge is first and foremost for subsistence and is largely held collectively. Many governments have turned to IPR lawyers to address the issue of protecting traditional knowledge of indigenous and local communities, and have stressed the need for such protection to be consistent with IPR standards. However, the dominant paradigms of IPRs and 'ABS' (access to genetic resources and benefit-sharing) reflect 'western' laws and models, rather than indigenous customary laws and values. Communities have their own systems for determining access to and use of traditional knowledge, based on values of sharing, reciprocity and community commons, which ensure the maintenance of TK, livelihoods and biodiversity.

*6) Policy responses should be consistent with indigenous customary laws.*

The recognition of customary (or community) laws and authorities should form the basis of TK protection systems at all levels, including in determining access to and rights over TK and bio-resources, procedures for Prior Informed Consent and equitable benefit-sharing. Given that TK and genetic resources are often shared freely between communities, even across borders, collective rights, decision-making and benefit-sharing amongst neighbouring communities should be recognised. While specific customary laws vary considerably between communities, there are many commonalities in the underlying customary *values* or *principles* of diverse ethnic groups. Common values include respect for nature or Mother Earth; free/open sharing of resources; reciprocity or equal exchange of resources; and solidarity or brotherhood i.e. helping those in need and serving the common good. Such principles could provide the basis for developing mechanisms for TK protection at local, national and international level.

*7) Indigenous and local communities must be allowed to participate actively*

Policy responses should be developed and administered with the active participation of diverse indigenous and local communities through a bottom-up process. The CBD process to negotiate an international regime on Access and Benefit-Sharing and TK protection needs to be broadened to enable representatives of **indigenous and local communities to participate fully in the decision-making** process. Similarly, such participation needs to be made a priority in WIPO's work to develop policy guidance for TK protection. Policy makers should recognise that an effective policy cannot be developed without the active involvement of indigenous representatives, whose expertise is as important as that of IPR lawyers. TK owes its existence to communities and to no-one else. Decisions about its use should be therefore be made by indigenous peoples.

*8) Policy responses should build on indigenous and human rights law*

A number of international laws and policies already recognise the rights of indigenous and local communities to their traditional territories, resources, customary laws and self-determination. The recently adopted United Nations Declaration on the Rights of Indigenous Peoples recognises indigenous peoples' rights to fully own and control their cultural and intellectual property, their lands and territories and natural resources. It also recognises their right to full recognition of their laws and customs, Free Prior and Informed Consent, self-determination, and collective as well as individual rights. International human rights law recognises the right of all peoples to self-determination and to freely dispose of their natural resources. The International Labor Organization (ILO) Convention 169 recognises the rights of indigenous and tribal peoples to their natural resources and territories and calls on governments to protect their social, economic and cultural rights, customs and institutions; to respect their customary laws and ensure their participation in decisions that affect them. These instruments provide an important basis for the development of holistic and human rights based mechanisms for the protection of traditional knowledge

### **The Research Problem**

The basic problem being addressed is the unauthorised use and misappropriation of traditional knowledge and bio-genetic resources of indigenous and local communities to develop commercial products (new drugs, seeds etc) and the lack of benefit-sharing with such communities. An increasing number of patents on TK-based products are filed each year, which grant private monopoly rights over community resources. This is partly driven by the WTO-TRIPs agreement (1994) which requires upgrading of patent and plant variety protection in developing countries, but does not require protection of informal TK. It is also due to the spread of US-style IPR standards (TRIPs-PLUS) through Free Trade Agreements and political deals, linked to the growth in power of the life science industry in the last few years.

Existing intellectual property instruments are largely unsuitable for protecting traditional knowledge because they protect individual rights as opposed to collective rights, and are exclusively for commercial purposes. Hence, indigenous and farmers' organisations have called for alternative 'sui generis' systems to protect TK which are based on the customary laws and practices of communities. A number of national and international policy processes are underway to develop sui generis systems to protect TK. While some recognise the need to support customary laws and practices, there is little understanding of what this means in practice. Furthermore, the development of policy and law to protect TK is often led by national policy makers and IPR experts, with little participation of TK holders themselves. Hence these processes are not well informed about local community needs, values and customary laws.

A key objective of this project is to promote policy and laws and local tools to protect TK that are in accordance with community norms and distinct socio-cultural context, rather than being modelled on alien concepts such as IPRs. Maintaining customary laws and institutions which support TK is essential for the well being and sustainable development of indigenous peoples, and provides a means to address multiple objectives of strengthening rights, livelihoods and conservation.

Three key research themes on customary laws and practices for TK management and protection were addressed:

- Knowledge generation, transmission and ownership amongst communities.

- Principles and conditions which should guide external access to TK and benefit-sharing, and development of local tools to protect TK.
- Customary institutions and decision-making processes for TK and GRs, and their interface with formal institutions

The project also explored the following issues:

1. The interlinked nature of TK, bio-resources, landscapes, culture and customary laws (or Bio-cultural heritage), and holistic approaches which protect all these components of knowledge systems.
2. The underlying customary law principles which are common to different groups of TK holders (equilibrium, reciprocity and duality) and what they mean for TK protection
3. The factors driving the loss of TK and responses which strengthen TK, livelihoods and biodiversity (eg. landscape/CBNRM responses)
4. Reversing the ABS paradigm, to provide access to genetic resources by communities, since they receive very few benefits under current ABS arrangements.
5. The development of bottom-up ABS agreements which are based on customary law as opposed to top-down contracts, in order to promote equitable benefit-sharing

## Research Findings

This section provides a summary of the main findings and conclusions of the project.

### **1. Maintenance of TK**

Across the diverse case studies, the key factors identified as playing a critical role in the development and maintenance of TK are quite consistent:

- *Use of diverse biological resources* for food, health, agriculture, cultural practices and spiritual well-being, provides a key mechanisms for sustaining TK and developing new TK. Bio-genetic resources, both wild and agricultural, form an integral part of TK systems.
- *Communal and family-level activities* in agriculture, NTFP collection, festivals etc. are also important mechanisms for sharing and sustaining TK; participation of children in daily agriculture and household chores (eg. collecting medicines from forest) ensures transmission.
- *Access to sacred landscapes and sites*. Specialised healing TK is often acquired and transmitted through rituals in sacred 'wilderness' areas – eg. forests (Yanadi, Mijikenda, Kuna), hills (Maasai) or mountains (Quechua and Lepchas) - which are often away from villages and rich in biodiversity. For example, Quechua people believe that the mountain gods teach them knowledge and customary laws.
- *Cultural values and beliefs*. The maintenance of TK is closely linked to distinct cultural values and beliefs – belief in spirits or gods associated with the natural world, and a holistic worldview where knowledge, biodiversity, land and spirits are closely interlinked. Customary laws include obligations to transmit, share and learn TK. Some studies found a direct link between the prevalence of customary and spiritual beliefs and the cultivation of traditional crops. Even in less traditional communities, where traditional authorities have been weakened, cultural preferences still play a role in sustaining TK and traditional crop varieties (eg. in the China case).

In addition to elders and healers, women play a critical role in sustaining TK because they are centrally involved in agricultural activities, food and health provision.

## 2. Drivers of TK loss

Change processes are evident in all the case study sites as a result of pressures of globalisation and the spread of western markets and society, although some of the communities face greater pressures than others. Most of the studies have reported that the younger generation aspire to modern lifestyles and view their traditional knowledge and values as backward. Hence when the older generation die, there will be a significant loss in TK unless efforts are made to address these changes. Some study sites are also experiencing significant loss of forest biodiversity and medicinal plants, while others have reported a rapid decline in crop diversity over the last 1-2 decades (China and India/Himalayas).

The drivers of change are often interlinked and complex and sometimes mutually reinforcing, leading to erosion culture. The key drivers identified in this project are:

1. Alienation of land and restricted access to traditional territories and sacred sites
2. 'Modernisation' due to proximity to western culture, markets, education and religion
3. Extension of government control, weakening traditional authorities and customary laws

A number of case studies have reported a significant take over of the traditional territories of the communities for commercial use and protected areas. The most dramatic case is probably the Yanadi, who have been evicted from their traditional forest dwellings and forced to settle in hamlets on the edge of villages and become landless labourers. Many of their forest lands have been designated government forest reserves and appropriated for commercial plantations. The Maasai are experiencing a steady take over of their communal lands for private use, mainly tourism, and conversion from communal ownership to family/clan owned group ranches. The Mijikenda lands have been taken over since the British colonial government developed an interest in economic use of coastal forests and gazetted some forests as Forest Reserves and National Reserves, including Kaya sacred forests. They were completely alienated from access and use, including for traditional rituals and prayers, and traditional rule over them and community policing were lost. In 1992, kaya forests were further gazetted as National Monuments, in response to exploitation by non-Mijikenda, creating a partnership management scheme. In both cases, the Mijikenda perceived ownership to have transferred to the government and this encouraged the local community to over-exploit the resources. Some sections of sea were also gazetted as marine parks excluding or minimising traditional management.

Such changes have had dramatic impacts on livelihoods and wellbeing of communities, and their ability to use and sustain TK, with differential impacts on different social actors. Yanadi women for example play a key role in health and food provision, hence restricted access to forest has led to a decline in health and nutritional status of communities and in the status of women. Land privatisation and reserves in Kenya has meant that medicinal plants are no longer readily accessible to Maasai and Mijikenda herbalists, and rarity of resources has brought hardship to communities. Privatisation favours the rich in communities, while the poor are disadvantaged. Reduced access and availability of timber for construction has affected Mijikenda men, whereas women who are responsible for water and firewood collection now have to spend more time searching for these resources.

Proximity of western society and markets, coupled with the difficulty of meeting livelihoods through traditional means, has led to take-up of non-traditional jobs and, in some cases, out-migration to find jobs. The effects of westernisation are particularly notable for groups like the Mijikenda, Yanadi, and Embera-Wounan, whereas the Maasai who live in more remote areas have been less affected by cultural change. Economic hardship has also led to relaxing of

customary laws – for example through use of kayas for eco-tourism. Inter-marriages has further weakened cultural practices and respect for traditional authorities (eg. for Mijikenda). It is also evident from a number of case studies that change processes have led to loss of conservation values amongst the younger generation who have opted for ecologically destructive livelihoods, further adding to the process of TK loss.

Comparison between different study communities highlights the importance of secure land tenure for maintaining TK and traditional governance, and buffering the effects of globalisation. Where communities have legal title over collective lands - the Potato Park in Peru and the Kuna in Panama - biodiversity and TK systems are less affected by drivers of change. The Kuna only have minor invasion problems at their borders caused by loggers, hunters etc. This threat is stronger and more frequent in the lands of the Embera and Wounaan that do not have legal recognition of their collective lands. Customary laws exist but their loss is more accelerated since they do not have a defined territory and their socio-cultural relations with non-indigenous farmers are more intimate. However, even amongst the Kuna, many younger people have lost interest in TK and TK holders are marginalised.

Some studies have shown that loss of crop diversity is linked to reduction in size of land holdings. In the China case, the very limited land for cultivation has forced widespread adoption of HYV to meet food production needs and prevented continued cultivation of traditional crops (except in some vegetable gardens for home use). In the Himalayan study, the significant decline in rice diversity is attributed to limited land holdings coupled with availability of cheap products in the market, even though HYVs have not been widely adopted. In Chattisgarh, decline in rice variety may be linked to a perception amongst farmers of low yields, which points to the need to adopt more intensive organic farming practices. The introduction of Hybrid Corn by Seed companies is making inroads assisted by government extension; hence farmers grow corn of local varieties in backyards for self consumption only. The danger is that once the networks with local traders and officials get well entrenched, this could be followed in later years with Hybrid Rice. The general response to the threat of loss of this diversity in various ways is the call for a collective effort to conserve the seeds in situ and increase their use for active farming by sharing seeds which are getting rare and lost from the community. There is also a felt need to improve the farming system as a whole.

Most of the case studies identified the extension of government institutions and laws to local level as a key change driver, which has weakened customary institutions and laws. For example the role of Mijikenda elders has changed to mainly working as a government in proxy and not necessarily in favour of traditions and customs. Traditional initiations to eldership were dropped and instead administrators select elders they wish to work with. As a result, traditional collective responsibility for resource management has given way to individualism, and only semi-traditional institutions remain. Between 1970 and 1980, the traditional village ngambi lost what might have been their last function – management of agriculture.

Some studies also noted the impact of western religions (Christian and Muslim) which has led to a weakening of traditional beliefs and practices, and a 'dual' religious system (eg. in the case of the Mijikenda, Kuna and Quechua). In some cases education was also identified as a key driver – eg. Mijikenda education recruits children as early as aged 3 and for a whole day, thus preventing elders and youths to hold traditional talks. The Maasai are less affected but government efforts to ensure education for all is likely to put them in a similar situation.

### 3. The Nature of customary laws

The project partners developed the following definition of customary law: “Locally recognized principles, and more specific norms or rules, which are orally held and transmitted and applied by community institutions to internally govern or guide all aspects of life”. Customary laws include basic principles or values, accepted practices (eg. for decision-making, conflict resolution), and specific laws with sanctions or penalties attached. Andean principles, for example, have legal character because they provide the basis for the patterns of conduct to which Andean peoples adhere. They therefore give rise to locally recognised norms and the duty to respect these, their infringement always being sanctioned.

The fact that customary laws are oral as opposed to written gives them the flexibility to respond to community needs and adapt to changing circumstances, and maintains their traditional character. But some customary laws have been codified, for example as part of community bye-laws or national indigenous laws, which include a mix of formal and customary law. Elements of customary laws may need to be written down to respond to external threats and opportunities, and ensure they are recognized by others (eg. in the Potato Park Inter-Community Agreement for Equitable Benefit Sharing; and the Kuna peoples’ General Law for their territory).

Indigenous customary laws are often shaped by spiritual beliefs, which are linked to biological and natural resources and landscapes. At the same time, beneficial practices or knowledge may become established as specific norms over time. When examined at local level, the interlinked nature of beliefs/worldviews, knowledge, laws, practices, natural resources and landscapes becomes evident. For example, in Panama, according to this holistic worldview, traditional medicine is an integral science, where physical-biological, socio-cultural and environmental-spiritual elements interact. Similarly, the Quechua worldview perceives that bio-physical/tangible and intangible elements cannot be separated.

Three key Quechua customary law principles have been identified and their significance for TK protection and equitable benefit-sharing was explored:

- *Reciprocity*: what is received has to be given back in equal measure. It encompasses the principle of equity, and provides the basis for negotiation and exchange between humans, and also with mountain gods, animals etc.
- *Duality*: everything has an opposite which complements it; behaviour cannot be individualistic, for example, in the union between man and woman; and other systems can be accepted or other paradigms used.
- *Equilibrium*: refers to balance and harmony, in both nature and society - eg. respect for the ‘Pacha Mama’ (Mother Earth) and mountain gods; resolution of conflicts. Equilibrium needs to be observed in applying customary laws, all of which are essentially derived from this principle.

These customary principles are very similar for indigenous communities in the other countries – in Panama, Kenya, India and China – even though they may be termed differently (eg. ‘harmony’ instead of ‘equilibrium’). A number of studies identified the principle of reciprocity in relation to seed and other exchanges. All of the studies identified a belief in gods or spirits associated with the earth and natural resources, and most found specific conservation norms that ensure sustainable resource use and hence the availability of resources in often hostile environments. In addition, the principle of ‘Cooperation’ or ‘Brotherhood’ was evident in a number of studies (Quechua, Kuna, Himalayan Lepcha), in practices for helping those in need without requirement to reciprocate and for redistribution of wealth in communities. While these

principles or values seemed to be widely shared by communities, more specific rules or norms vary considerably in different ecological/cultural contexts.

In the case of Peru, the study noted the existence of customary laws in force for the administration and maintenance of institutions, habitats, territories, natural resources, biodiversity, language and culture itself. They can prescribe behaviour and conflict resolution mechanisms in anything from irrigation to sexual morals.

The Panama study identified four categories of customary law that relate to biodiversity/TK:

1. System of beliefs or 'Cosmovision': This is the set of knowledge that relates to the origin of the earth and natural resources, both the material and spiritual worlds. TK is based on the worldview that the land maintains man, and land, soil and territory with their diverse components are works of god, each one has a spirit.
2. System of values: set of social, cultural and spiritual values which places man as an inherent and equal part to all living surroundings; and also establishes principles for interpersonal relations – solidarity, cooperation, reciprocity, equity, conservation.
3. System of codes of conduct or ethics: set of norms established for biodiversity users, like hunters, collectors, healers, relating to conservation of sacred sites, and rules of responsibilities of traditional healers.
4. System of practices and customary laws: set of rules of practice for use of the earth and its resources

Where customary institutions and laws have been weakened, customary laws are still evident in the underlying values, worldviews and customs of communities. Spiritual and supernatural beliefs are still fairly strong and provide the basis for conservation norms, through a fear of upsetting the gods that provide seeds, soil, medicinal plants etc. and the consequences of this (eg. lack of rain, disease). Worship of gods and goddesses relating to seeds, and use of rituals and ceremonies to show respect to the gods in agriculture activities, and to gods relating to forest flora are also widely evident.

Cooperative behaviour is also observed in many of the communities, through pooling labour, collective agriculture activities, norms that guarantee participation of community members and for helping those in need (eg. widows, orphans, elderly). However, in many of the case studies, customary values and norms are becoming weaker amongst the younger generation. In those that are more westernised – such as the Mijikenda- cooperative practices have largely given way to more individualistic behaviour.

#### **4. Customary laws for TK ownership**

Patterns and perceptions of knowledge ownership amongst communities were explored in order to inform the development of appropriate systems for TK protection, access and benefit-sharing and PIC, which reinforce customary modes of knowledge use and transmission, and avoid generating conflicts amongst communities. The findings emphasise the need to recognise collective ownership over traditional knowledge and resources, and the vital role of collective ownership and management of resources for maintaining TK systems, biodiversity and livelihoods in what are often difficult environments.

The studies identified three categories of knowledge:

1. Communal or common knowledge which is openly shared
2. Specialised knowledge (usually medicinal) which is restricted to family lineage, clan or kin.
3. Sacred knowledge which is kept secret amongst healers or elders

In general all traditional knowledge and resources are considered to be collective heritage of a community or ethnic group, even if the accumulation of knowledge is individual, because they are ancestral heritage, and are believed to come from God. Therefore, individuals cannot claim property or ownership rights over traditional knowledge and bio-resources.

Agricultural crops and knowledge have a strong collective basis due to the sharing values and exchange practices which provide access to new seeds and crops – sharing between villages and with outsiders is clearly evident in the studies. Similarly, medicinal knowledge is freely shared and practiced for community welfare, within and between villages. There is an obligation to share knowledge and resources, which is especially strong obligation in relation to seeds. Sharing seeds between communities is important to access different varieties and maintain purity of seed. Even knowledge which is held secret is held primarily as a service to humanity –to heal the sick – and not to make profits.

Since land is either collective property of the entire community or of a family, the resources on the land and knowledge that shape their use are also held collectively. Furthermore, communities engage in many collective actions and labour sharing in farming and house building etc, which creates a certain value framework. People have a dual responsibility – to meet individual needs and to support collective needs of the community.

The studies suggest that collective ownership should include neighbouring communities which share resources and knowledge systems. The practice of sharing with far away villages and the concept of a common heritage of a peoples which share the same resources and culture brings practical challenges for PIC and ABS, particularly if there are no traditional authorities or representative organisations at these levels. For example, the six Potato Park communities will receive benefits from the agreement with CIP, but what about Quechua villages neighbouring the park? The aim is to establish a 'bio-cultural corridor' based on customary norms so that benefits of repatriated potatoes are shared and exchanged with Quechua communities outside the park and enter the wider local economy to generate maximum horizontal benefits and avoid conflicts.

However, concepts of property are changing from more collective to individual notions as a result of various change processes. For example, changes in land tenure laws which have replaced communal with private ownership, take over of communal lands, and proximity to western society and markets. Thus, in some communities, younger actors and individual knowledge holders are starting to see their knowledge as *their* property and not part of the heritage of their community. It is therefore important to re-establish and strengthen collective rights over TK and collective NRM where feasible.

## **5. Customary laws for Access to TK and Bio-resources**

The project examined the customary laws and practices of communities relating to access to traditional knowledge and bio-resources and equitable benefit-sharing, and what these mean with respect to access and benefit-sharing by third parties. Key findings from the case studies can be summarised as follows:

1) *Responsibility to provide open access to others:* A number of studies found that communal knowledge and resources are given openly to others, and those who have accessed TK are obliged to openly share it with others. In other words, access is conditioned by the customary law that requires access to remain open. With respect to third parties, this suggests that access

is conditioned by the obligation not to obtain private property rights which will prevent access by communities to the knowledge/resources transferred. For specialised TK, access is only open to family or clan, but there is still an obligation to ensure it is transmitted to future generations.

In some cases (eg. Mijikenda), communal TK is traditionally not freely given to people outside a tribe or ethnic group, or to foreigners/non- villagers, and those that break this rule may be sanctioned. But in other communities, common TK is shared with anyone (eg. Maasai and most other cases). Thus, communities may need to modify their free sharing practices when it comes to third parties.

2) *Responsibility to keep certain knowledge secret.* A number of studies have found community level systems to protect sacred traditional knowledge and bio-resources which are used in spiritual healing rituals, ceremonies, worship etc, and have religious meaning. Only specialised healers or elders can hold this sacred knowledge, and they are obliged to keep it secret in order to maintain its sacred character, and may be penalised for not doing so, while other members of the community are obliged to keep at the margin. In some communities, a secret code or language is used to maintain secrecy (eg. in Panama and Kenya) and the holder is traditionally put under oath not to share the TK. Hence national TK policies and ABS regulations should allow communities to deny access as part of the PIC process, and respect the need to prevent collection, use or dissemination of secret knowledge and resources.

3) *Access to bio- resources.* Most of the studies found community rules for regulating access to bio-genetic resources. For example, the Mijikenda ngmabi traditionally controlled access to resource base areas such as the kaya forests and the sea through traditional rules, including use restrictions and prohibitions on resources of special use such as medicinal plants, sacred kaya areas, and rare species. Collection of most resources was controlled by PIC, although healers had free access to medicinal plants for community health. Other studies also identified restrictions on access to bio-genetic resources in sacred sites; and rules to ensure resource conservation and sustainable use. In some cases, communities have agreements with neighbouring communities for access to resources they do not have.

#### 4) *Reciprocal Access and Equal Exchange*

The principle of reciprocity is observed in all of the study sites in relation to seed and other exchanges. For example, Quechua economic systems are founded on this principle of reciprocity, which provides an essential mechanism for survival outside the monetary economy. There is a responsibility to give in order to receive, and those that receive have the responsibility to give back in equal measure. Similarly, when communities provide access to knowledge and resources to third parties they expect to receive knowledge and resources in equal measure. Thus, third parties and ABS policies should emphasise the need to provide reciprocal access to knowledge and bio-genetic resources, in return for access provided by communities, and not only focus on monetary benefits (which can undermine traditional values and create conflicts).

#### 5) *Responsibility to ensure proper use*

A number of studies identified rules and norms which ensure that medicinal knowledge is only transmitted to people who are motivated and fit to ensure its proper use for the benefit of communal healthcare. Transmission of knowledge is often subject to a process of assessment of the recipient or apprentice. For example, the Kuna and Embera have a code of ethics for use of medicinal knowledge; while the Maasai and Mijikenda traditionally use a rating process to

assess the personal conduct and motive of the applicant. This implies a responsibility on the part of third parties to also ensure proper use of knowledge in the interest of community welfare. For example, third parties could develop drugs to treat the illnesses of the community and not those of western countries (as is normally the case).

In addition, some ethnic groups (eg. Maasai, Mijikenda and Yanadi) traditionally protect their specialised medicinal knowledge from non-specialists through the belief that it will only be effective if used with proper rituals and initiations, and that non-compliance will be severely punished by spiritual powers. However, such beliefs are unlikely to be shared by third parties, leaving communities open to misappropriation and misuse.

#### **6. Customary laws for Equitable Benefit –Sharing:**

TK and bio-resources are perceived as collective heritage and the free and continual sharing of resources and knowledge forms a critical part of traditional innovation systems and livelihoods. Therefore, in order to be equitable and reinforce collective knowledge and resource management, benefit-sharing should be at community level and amongst neighbouring communities, as well as accruing to particular individuals or families.

The research in the Himalayas shows how genetic resources may be shared freely between neighbouring communities in different countries – and hence be developed jointly by communities in different countries. In this situation, it may be necessary to share benefits amongst communities in different countries in order to ensure 'equity' and support local innovation systems and concepts of ownership. Common regional/cross-border mechanisms and policies for TK protection may also be useful.

A number of studies have identified values and practices for ensuring fairness and equity in the communities. Such cooperative forms of behaviour are particularly evident in more traditional and isolated communities, with a strong identity, where decisions and resource management are still largely collective. By contrast, where communities have become more integrated with western society (eg. the Mijikenda), customary laws are more likely to be sidelined or used by local elites to reinforce inequities in society. Whereas the Mijikenda healers traditionally charged small token fees, ensuring benefits for the whole community, they now charge high fees for herbal healing which patients cannot ordinarily afford.

As noted earlier Equity forms is a key customary law principles or value which is inherent in the principles of Equilibrium and also Reciprocity, and is common to different ethnic groups. Traditional community authorities are responsible for ensuring equity is maintained in the community. The Mijikenda ngmabi for example were non-partisan in the application of traditional law, fearing spiritual wrath for unfair application. The requirement of PIC for most cultural aspects contributed towards equitable benefit-sharing in the community. Controlled access to resources through PIC ensured equitable distribution of benefits to all, including future generations. Collective land tenure also played a considerable role in equitable benefit-sharing.

Collective decision-making also promotes equity. Community participation in decisions and importance of reciprocity was observed in a number of the study communities even where traditional authorities are not so strong (eg. India Himalaya and Adhivasi). In the Potato Park, decisions are made collectively or by 'varayocs' (elders). Quechua cultural values stress the importance of inclusion by all in decision-making, and through reverence for the varayocs, such values heavily influence knowledge, biodiversity and land are administered.

Customary laws and practices for equitable benefit-sharing were explored in the Potato Park to inform the development of an Inter-Community agreement for Equitable Benefit-Sharing that will be used to distribute benefits from the agreement with CIP and other sources. The aim is not only to ensure that benefits are distributed equitably, but also that their use contributes to traditional economic systems and maintaining the cultural and ecological integrity of the Potato Park, as per the principle of equilibrium.

The research found that villagers receive benefits in accordance with the work they have done for their community, and how punctually it has been done. This customary norm is fundamentally based on the Andean principle of Reciprocity. It means that the more work one does, the more benefits one receives. At the community level, this means that the communal authority can promote equity among households by distributing benefits according to how much work each household contributed. Benefit-Sharing is guaranteed to all but is conditioned by customary laws of equity, resource conservation and use.

Norms which promote equity at household level were also identified. The distribution of land within the family responds to their behavior, and daughters receive less land than sons due to the fact that, after marrying, they will leave their house to go live with their husbands (who due to tradition may have more land). Sons and daughters have the responsibility of respecting their parents and behaving properly, as well as working hard at household labor. Parents are responsible for distributing benefits in a fair and equitable manner once the sons and daughters have fulfilled their responsibilities

In order to redistribute wealth and maintain equity among villagers, wealthy people are responsible for covering the costs of communal festivities as a way to reciprocate to the community for benefits received. The accumulation of wealth is dissipated through a fiesta for the benefit of the entire community. This customary law—to give back to the community—enables a continuous flow of wealth from more to less privileged families, thereby promoting equity and poverty reduction.

The research also identified "Mink'anakuy", which is widely practiced in the Andean world, and is a mechanism for distribution of wealth to those in need of support (eg. orphans, widows, disabled or newly weds), without an obligation to return the support in equal measure. Similarly, the Panama and India/Himalayan studies identified strong values of brotherhood. The Lepchas have a mechanism for helping needy families when a calamity befalls them, through voluntary contributions without any obligation to reciprocate.

## **7. Customary Institutions and Decision-making**

A critical part of the recognition and protection of community rights over their knowledge and bio-resources is ensuring that decisions concerning access and use are made by communities – through their Prior Informed Consent. The project sought to clarify issues of whose PIC is required and what kind of PIC process is needed in accordance with customary laws and practices. To some extent these issues have already been addressed by looking at TK ownership patterns and community norms for regulating access.

Since TK is held collectively, decisions need to be made by a representative community authority and not by an individual knowledge holder. The dangers of not acquiring PIC through a community-level authority have been highlighted by some of the studies. In Panama, since the government does not recognise the fundamental law of Kuna Yala, in many cases external

users have not approached the maximum Kuna authority but gone directly to individual knowledge holders, who due to economic need, have given up their knowledge for a small sum of money. In Kenya, permission to access a Mijikenda kaya for research purposes was granted by the Kwale County Council. Since the community was not involved through their PIC for access to the kaya, the research organisation thought that the kaya was in the process of changing ownership, and mass extraction of plants and biodiversity degradation ensued.

In order to be consistent with customary laws and practices, PIC should be sought from traditional authorities/ elders (eg. the Maasai Leibon and Olioiboni, Quechua varayocs, Mijikenda ngambi), where their authority is still respected by the community. Since knowledge is perceived as cultural heritage of an indigenous or ethnic group, PIC should be first sought not from a single community but from the highest level of representation for that ethnic group in a particular territory or area, provided it is legitimate and recognised as representative by the communities. The Kuna and Embera-Wounan each have a General Congress which have special institutions for dealing with culture and TK issues. In the Potato Park, the six communities formed an Association of Potato Park communities to register collective land title and this provides a representative organisation at supra-community level. Where there is no such a supra-community organisation, the traditional authorities or elders from neighbouring communities could be brought together to facilitate a collective decision.

The PIC process may then require consultations with the source community and any individual owners of knowledge or resources. Where specialised knowledge is concerned PIC may be required both at community and also with the family or clan and the individual knowledge holder. Hence a two-tiered or multi-tiered PIC system may be required. The Kuna peoples have developed a Fundamental Law of Kuna Yala, based on customary laws and protocols. It requires any external researcher to present a proposal to the Kuna General Congress which submits it to a technical committee for initial evaluation and discusses it with the authorities of its 49 communities. If accepted, the researcher then also has to obtain permission from the specific community, which can be accepted or denied. If approved, the researcher can approach a knowledge holder who can also agree or deny access to knowledge.

Traditional decision-making usually has a spiritual dimension. For example, Maasai elders have political and spiritual power, and the system of elders is headed by the Olioiboni who is considered a priest-prophet, as the intermediary with god and his power and advice are believed to come from God. His status is primarily that of ritual leader, not political. Decisions are made by the elders and then through a spiritual process. Even where traditional authorities have been weakened, such as the Adhivasi, their various Gods and Ancestral spirits are always consulted and propitiated before making important decisions.

Where traditional authorities have been weakened or partly replaced by government institutions, more collective decision-making may still be happening, for example in agriculture activities. For the Adhivasi in Bastar, community activity and participation in decisions is central to their values and lifestyles, even though State institutions like the elected Panchayats have made inroads in village traditional decision making. In areas where communities are close-knit, traditional institutions and decision-making is in place, mostly at hamlet level and at times involving the entire village. But in other areas, such as for the Lepchas and Yanadi, traditional institutions have been replaced by Panchayat and Gram Sabhas – in some cases these might be constituted by elders, or nominate elders to make decisions, and may thus be effective in regulating access according to customs and norms. But in others they are more controlled by government and include younger headmen selected by the government instead of elders.

Communities such as the Yanadi and Mijikenda are heterogenous– with the elders wanting to reinstate customary institutions and norms and the youth largely against this. Changes amongst the Mijikenda have meant that some customary laws have been modified and others completely lost. Entrepreneurs in the community are against communal ownership of biological resources. While in the past, each sub-community formed a closely-knit society controlled by a council of elders, the ngambi, today customary laws are in the process of disintegrating as the tribes become loose associations of people embracing the state framework. Customary laws are selectively recognised, according to a person's interest, and because there are several legal systems in place, offenders find refuge in the appropriate authority.

In Guangxi, customary laws are still evident in communities and differ between ethnic groups, but they seem to be more akin to customs than laws, and traditional institutions have been replaced. The community decision-making process is dominated by village committee, which is under the government political institutional system. Although this system is becoming more democratic, it still cannot fully represent farmers and local communities' interests.

Where communities are in a state of transition, it may still be possible to 'rescue' and strengthen elements of collective organisation and re- establish community-level decision-making for PIC and benefit-sharing (as is being done in the Potato Park). However, in communities such as the Mijikenda, which have become notably westernised and individualistic, with a number of healers already practicing commercially, this may be more difficult, and more IPR-like tools which protect individual rights may also need to be made available to protect traditional knowledge.

## **8. Customary Laws for conflict resolution**

In Peru, traditional conflict resolution mechanisms were also examined for incorporation in the intercommunity agreement in the Potato Park. Conflicts are dealt with at three levels: first at the family level (here resolution takes place through dialogue), then at the traditional authority (elders) level and finally at the general assembly level. Not only because conflicts are more likely to be solved and the resolutions accepted if done through customary processes but also because there is a different rationale behind the management of conflicts in Andean societies. Andean justice systems have a restorative rather than punitive nature. Decisions or sanctions imposed always aim to restore social equilibrium and reinsert the individual into society.

There seems to be a threat that if voluntary compromise is not attained relationships of the parties may be disrupted or damaged. As kinsmen, especially, are aware of the degree of their interdependency, the threat of a break in normal peaceful relations is a factor to be carefully weighed against the value of "winning" a particular dispute. Conflict resolution mechanisms aim at the good administration of resources, which are vital for the livelihood, productivity and self-development of communities. The incorporation of traditional conflict management mechanisms in the Inter-Community Agreement represents an integral part of capacity building of the communities in the self-management of their natural resources.

## **9. Recommendations for TK protection**

*1. Strengthening customary governance:* Customary institutions and laws play a central role in ensuring the continuity of traditional livelihoods based on TK and biodiversity. They encompass values and rules for equitable and sustainable resource use, poverty reduction, and protection of traditional knowledge. For TK protection to be based on customary laws, these laws need to be recognised by communities and others. But they are becoming weak in many cases due to

the influence of government institutions and western society. The strengthening of customary institutions and laws is important to protect TK in the face of multiple drivers of change. Revitalising customary norms can also enable communities to take advantage of new development opportunities without losing their cultural values. Traditional institutions such as Mijikenda ngambi should therefore be legally recognised and given proper powers and mandate for protection and management of CBCH.

*2. The need for holistic approaches to protect TK:* Most national and international policies focus narrowly on protecting the intellectual component of knowledge systems. TK is rapidly disappearing, and as this project has shown, biological resources, landscapes, culture and customary laws all play a critical role in the maintenance TK systems. Furthermore, in the holistic worldview of TK holders, these elements are closely interlinked and cannot be separated. Hence, approaches to protect TK should protect rights over all these interlinked components of knowledge systems – or Collective Bio-Cultural Heritage - and not just TK. For example, the Potato Park in Peru is an Indigenous Bio-Cultural Heritage Area and acts as a sui generis system for TK protection based on the concept of CBCH. This concept provides the basis for a range of tools for TK protection (community registers, protocols, agreements etc). It implies the transfer of responsibilities, as well as rights, to communities to protect CBCH for future generations and mankind as a whole.

*3. Focusing on community resource management as well as legal tools:* The best way to protect community rights over TK is to enhance their control over TK and resources at local level by strengthening community-based resource management systems, in addition to legal protection. This approach enables strengthening of rights to be combined with improved livelihoods and biodiversity conservation. In China, for example, farmers own organisation and community based management were identified as essential for the enhancement of farmers' collective right at local level and recognition by the state. Furthermore, while national laws may be too rigid to respond adequately to community needs, a landscape based approach such as the Potato Park can protect institutions and culture in a flexible system.

*4. Securing collective land tenure.* Legal recognition of a collective territory provides a means to strengthen collective rights over knowledge and resources in a defined area, thereby acting as a positive protection mechanism. This can also facilitate the re-establishment of collective resource management and governance systems and the continuation of traditional economies. 'Soft' IPRs such as collective trademarks can be used to provide added defensive protection for commercial products.

*5. Recognising collective resource rights.* Most communities feel that TK and resources are their collective heritage. Collective resource management is a key feature of traditional economies ensuring maintenance of diverse bio-resources and survival in harsh environments. Community policing and cooperative norms are also stronger under collective management regimes. Hence collective ownership and benefit-sharing should be legally recognised and form the basis of local implementation. Even where collective management systems have been weakened and are not recognised by many younger people (eg. Mijikenda in Kenya), policies should still allow for existence of both collective and individual rights and benefits.

*5. Taking a flexible approach.* National sui generis systems should be broad enough to allow for diverse cultural and ecological contexts. Traditional knowledge and biodiversity resources and associated customary laws differ from place to place and sometimes from community to community. Hence, it may be best to have common elements for developing a sui generis legal

mechanism for protection of traditional knowledge, innovations and practices and not a common sui generis mechanism. Underlying customary law principles, such as equilibrium, reciprocity and duality, and the concept of BCH, could provide common elements on which to base national and international policy and law.

*6. Institutionalising PIC for access to TK and bio-resources.* PIC of communities is vital for the effective protection and management of TK and bio-resources, and should be institutionalised from community to national level with efforts to build the necessary institutional representation. ABS frameworks require PIC of governments for access to genetic resources but rarely recognise the need for PIC to also be obtained from communities for access to bio-genetic resources collected from their lands and territories. Traditional crop varieties are themselves traditional innovations, while both wild and agricultural bio-resources form an integral part of TK and innovation systems. Protecting TK in accordance with customary law implies a recognition of community worldview where TK and bio-resources cannot be separated and both form part of their heritage. Therefore, indigenous peoples should be guaranteed prior informed consent for access to and use of their bio- resources as well as related TK.

*7. Respecting the right to deny access.* This right is often violated by current access arrangements. Corporations have repeatedly engaged in biopiracy, appropriating and privatizing traditional knowledge without the prior informed consent of indigenous peoples. If countries are to protect the rights of indigenous peoples over their cultural patrimony, they must uphold the right of indigenous peoples to keep their knowledge secret. This means guaranteeing PIC for use of community TK and resources whether held ex situ or in situ and allowing communities to deny access as part of the PIC process.

*8. Rethinking ABS frameworks.* ABS as currently conceived, facilitates access by companies and researchers to community resources for bioprospecting and obtaining IPRs, without providing adequate safeguards for protecting community rights. Most accessions are made ex-situ, to resources collected prior to 1993 which require no PIC and BS under the CBD, or to ex-situ resources in the South where access is controlled by national governments, without requiring PIC of communities. But most of the resources held ex-situ originate from communities and were collected without PIC for scientific or commercial use. Some of the studies, eg. the Indian Adhivasi case, view the ABS framework as established by the CBD and FAO and the national biodiversity law as working in tandem with IPRs to facilitate biopiracy of community resources.

*9. Promoting 'Reverse' or Reciprocal Access.* Protecting TK in accordance with customary law implies the need for reciprocal access to resources and knowledge. For communities, access to lost crop varieties or medicinal plants may be more important than monetary benefits. The customary right to freely access knowledge and resources implies a "reversed access" where communities also gain access to ex-situ stocks like gene banks, botanical gardens, and research institutions. Renewed access to lost livelihood resources would provide new opportunities for poverty alleviation, whilst restoring biodiversity and associated knowledge and cultural values. This is particularly important given the loss of diversity and the impacts of climate change in many communities. Yet government policies often restrict access to ex-situ resources collected from communities. The Repatriation Agreement between the Potato Park and the CIP sets a precedent for this new approach of reciprocal access, which should be more widely adopted by other CGIAR centers, botanical gardens etc.

10. *Improving the Recognition of customary law.* Whether or not a sui generis mechanism based on customary law will be effective depends somewhat on the extent to which customary law is recognized by formal legal systems. Customary laws are often recognised in national constitutions and some statutes. However, given that they are not written down, they are viewed as informal customs and the weakest source of law. Thus in practice customary law is subordinate to formal law, particularly if there is a conflict between them, and it can be too difficult to satisfy requirements of evidence of long usage. Experience in India shows that decentralised laws of autonomous councils at sub-state level are often closer to the values and customary laws of the area. In Peru, the Inter-Community Agreement for Equitable Benefit-Sharing is based on customary laws in the Potato Park, which will be recognized as law by being annex to a legal contract.

11. *Creating more supportive policy frameworks* – The protection of traditional knowledge based on customary laws also implies the need to challenge IPR tools that create monopoly rights and restrict community access to traditional knowledge and resources. As noted in the Himalayan study communities, any move to extend IPRs to seeds in the region will lead to turbulence amongst communities and the social cohesion within the community. Even policies termed 'sui generis' systems for TK protection include UPOV style provisions for plant variety protection which resemble conventional intellectual property systems and seek largely to protect the interests of commercial actors, rather those of communities. India's Protection for Plant Varieties and Farmers Rights Act, for example, aims to protect both plant breeders and farmers rights, but its provisions are weighted in favour of plant breeders and risk undermining farmers' customary use and knowledge systems which depend heavily on the use of farm saved seeds. In addition, protection of TK implies reviewing a range of policies, including conservation, agriculture, health, education, which undermine TK, culture and biologically diverse production systems.

12. *Enhancing awareness of IPRs and ABS amongst communities*

Some studies have noted that the lack of awareness amongst communities about the threat of biopiracy and IPRs and their rights in ABS undermines their capacity to defend their resource rights. Any access and benefit sharing mechanisms developed without proper capacity building exercises to sensitize communities of the new challenges posed by the onset of evolving legislation in the area of intellectual property protection, will not bring forth fair and equitable results. Furthermore, greater awareness of the issues is needed to improve participation of communities in the development of policies for TK protection and ABS so these are inclusive of diverse communities.

13. *Recognising Farmers' Rights in Participatory Plant Breeding.* It is clear that both local farmers and external breeders make important contributions to the PPB process, and that if a commercially valuable PPB variety arises, benefits should be shared with local farmers to reward their contribution of local genetic materials and knowledge. According to China's Regulation on Protecting New Plant Variety, if there is more than one breeder during the process, breeders can have the co-ownership of the IPR on new variety, but they need to make an agreement through a contract for benefit sharing. This provides the opportunity for benefit sharing in Participatory Plant Breeding.