Local Knowledge Systems and Mechanisms for Benefit Sharing

A.S. Kauzeni and N.F. Madulu
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<table>
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<th>Description</th>
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<tbody>
<tr>
<td>CBD</td>
<td>Convention for Biological Diversity</td>
</tr>
<tr>
<td>IPR</td>
<td>Intellectual Property Rights</td>
</tr>
<tr>
<td>LK</td>
<td>Local Knowledge</td>
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<tr>
<td>LKS</td>
<td>Local Knowledge System</td>
</tr>
<tr>
<td>NEMC</td>
<td>National Environment Management Council</td>
</tr>
<tr>
<td>RRC</td>
<td>Regional Resource Centres</td>
</tr>
<tr>
<td>VPO</td>
<td>Vice President’s Office</td>
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1 LOCAL KNOWLEDGE SYSTEMS (LKS) AND MECHANISMS FOR BENEFIT-SHARING: LESSONS OF EXPERIENCE IN TANZANIA

1.1 Abstract

There is a growing interest at both national and international level on the role of local knowledge (LK) in participatory development approaches. It has been realized that development and preservation of LK are not contradictory. To get the maximum benefit from local knowledge systems (LKS) legal recognition of the Intellectual Property Rights (IPR) is imperative. This paper discusses LKS and mechanisms for benefit sharing in Tanzania, as well as outlines the current experiences and lessons regarding concerning these subjects. An attempt was made to identify gaps and propose appropriate systems and mechanisms for enhancing LKS and benefit-sharing, concrete actions and relevant institutions or individuals to take such actions to facilitate benefit-sharing between users and generators/owners of LKS.

The paper recognizes the value LKS in facilitating national development. More important, the local communities that share their LKS need also to share the benefits that accrue from those LKS. To facilitate this, a formula that can be used in making calculations of the benefits to be given back to the local communities or LK owners was suggested. This will facilitate securing cooperation between the producers/owners and users of LK. Various mechanisms that should be used to ensure that benefit-sharing is fair, equitable, and beneficial to the society at large were also suggested. An attempt was made to identify actions needed to occur, as well as individuals or institutions (including legal institutions) to implement those actions. However, most LK is stored in people’s minds and therefore not easily accessed. Access to such information or knowledge depends on its nature or type, and the willingness to pass it depends on individual decisions. To facilitate benefit sharing there is a need to have an institution charged with the responsibility of dealing with all issues pertaining to LKS, including benefit sharing. An LK center under the Vice President’s Office (VPO) is proposed to monitor and supervise the LK activities. The aim should be to attain the optimum combination of the best practices from traditional and modern knowledge, but at the same time interests of custodians of LK in terms of benefit sharing must be kept in the forefront.

1.2 Introduction

There are as many definitions of LKS as there are writers on the subject. In the present context and also according to the Inter-Commission Task Force (UNEP, 1992), Indigenous Knowledge Systems (IKS) may be defined as local community-based systems of knowledge, which are unique to a given culture or society and have developed as that culture has evolved over many generations of inhabiting particular ecosystems. According to the Convention for Biological Diversity (CBD), Indigenous Knowledge (IK) is employed to mean “knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyle relevant for the conservation and sustainable use of biological diversity”\(^1\).

IKS is a general term that refers broadly to the collective knowledge of indigenous people about relationships between people, habitat and nature. It encompasses knowledge commonly known

\(^1\) Extracted from http://www.biodiv.org/socio-eco/traditional/what-is.asp.
within a community or people, as well as knowledge that may be known to tribal elders, a lineage, group, or a gender group (IUCN, 1997). IK is unique to every culture and society and it is embedded in community practices, institutions, relationships, and rituals. IK is considered a part of local knowledge, in the sense that it is rooted in a particular community and situated within broader cultural traditions. It is a set of experiences generated by people living in those communities.

However, the most crucial questions with regard to indigenous knowledge transmission are:

(i) How does one secure cooperation of individuals, groups, communities, societies or tribes that harbour IK to be passed over the others?
(ii) What formula can be used in sharing-benefits or royalties accruing from indigenous knowledge? Should compensation be given directly to individuals, groups, etc, which leads to profit making?
(iii) How can benefit sharing be made fair and equitable?
(iv) Who decides what to do with future royalties and other benefits?

Answers pertaining to the above questions call for the introduction or development of systems and mechanism, identification of actions to be taken, as well as the identification of individuals, or institutions including legal institutions which should take the actions, to make IK more meaningful and beneficial to the society at large.

1.3 Attributes of Local Knowledge Systems (LKS)

The value of LKS in facilitating development is gradually being recognized by national and international development agencies. Nevertheless, these systems are not yet familiar to many professionals working in or promoting rural development. One of the reasons is that there is little published literature not only on LKS, but also on methods for studying them notwithstanding the growing interest in the subject. Resulting LKS are stored in people’s minds, rather than put in an accessible database. Storage of knowledge in people’s minds bears high risk of losing it. Maundu (1995) points out that traditional IK is diminishing at an alarming rate with the ageing of those in the indigenous population with strong links to the past.

The second attribute of LKS is that the willingness to pass on the required knowledge from one person to another depends on the nature or type of knowledge. The general knowledge e.g. on the weather, environment, crops varieties to grow, types of wild fruits to eat, etc. are regarded as public knowledge. Accessibility to such knowledge is quite easy. Any interested person can acquire such knowledge from elders or any other custodian of the knowledge if he asks for it. On the contrary, highly sensitive knowledge e.g. on certain types of medicines is regarded or treated as secretive or confidential and personal. Such knowledge is restricted and not easily acquired. This is the main cause of paucity for such types of knowledge. In order to acquire such types of knowledge sometimes one has to pay for them. The whole process leads to the concept of protection of “intellectual property rights.” Kauzeni (2000) and Mararike (1996) encountered similar situations in Tanzania and Zimbabwe respectively in their studies on LKS.

The third attribute of LKS is that these systems are prone or a subject to ignorance by rural development advocates. A growing body of evidence indicates that one of the main reasons why ‘conventional’ development approaches have failed is that they have tended to ignore the LKS (Morin-Labatut and Akhtar, 1992; Salas, 1994; Warren, 1991). This has led many people to argue that in order to ensure a more socially and ecologically sound approach to
development, it is necessary to understand, respect and utilize the LKS (Berkes and Folke, 1994; Hecht and Posey, 1989).

1.4 Justification and mechanisms for compensation of local communities for benefit sharing

Local communities that share their own knowledge can also share the benefits that accrue from the knowledge and can as well get compensated for that knowledge. Sharing LK within and across communities can help to enhance cross-cultural understanding and promote the cultural dimension of development. LKS are dynamic, and are continually influenced by internal creativity and experimentation as well as contacts with external systems (Flavier, et.al. 1995).

Laird (1993) and Greaves (1994) point out that the issues involved in securing a legal status for indigenous knowledge and compensating local people for that knowledge are complex. They argue that there is no consensus among anthropologists and other who work with indigenous people on how this can be achieved. Some argue that any compensation or ‘benefit-sharing’ due to intellectual property rights (IPR) would actually be a new-legal form of colonization or "bio-piracy". Others hold that, whatever its limitations, IPR are an important legal instrument by which indigenous people can be protected from exploitation (Green, et. al., 1999). The contention of this paper is that compensating the indigenous people for their knowledge and benefit sharing are absolutely necessary for maintaining their morale and for securing their cooperation. In order to make these practices mandatory or binding, they must have a legal backing.

1.5 Justification for benefit-sharing and compensating local communities

Scientists and international development specialists refer to or regard knowledge, innovations and practices of indigenous people as LKS. It is in this context that this paper is written. Since LKS are local community-based systems of knowledge, it is logical and justifiable that any profit accruing from the use of that knowledge, innovation or practice must be shared by either the individuals or groups of people from within the community or by the entire community. The following are suggested actions and mechanisms for establishing benefit sharing systems and mechanisms.
2 ESTABLISHING BENEFIT SHARING SYSTEMS AND MECHANISMS

2.1 Establishment of the Local Knowledge (LK) Resource Centre

The first step in establishing appropriate systems and mechanisms for profit sharing is the establishment of LK Resource Centre. This centre *intra alia* will be charged with the responsibility of coordinating at all activities and issues related to LKS, including benefit sharing. It will offer opportunities for researchers to record and document LK for the purpose of facilitating development activities. It will also provide the means for acknowledging valuable contributions to the world’s pool of knowledge and for conserving LK in the best interests of Tanzania and its people. The centre will serve as a media for national and international networking and information exchange. The other functions of the centre will be to design educational materials for use in universities and in the national institution that offer training for extension workers. It will also be responsible for establishing documentation units, where recorded systems are stored and made accessible for use by development workers. Since the functions of this centre cuts across or government ministries it should therefore be located under Vice Present’s Office (VPO) as parent ministry.

2.2 Establishment of the LK Resource Centre Board

A Centre’s Board of Directors will be formed consisting of two or three representatives from indigenous communities; one from Vice President Office; two from Commercial institutions (Firms, Companies, etc.); one from Tanzania Commission for Science and Technology; one each from the Ministry of Natural Resource and Tourism, Sokoine University of Agriculture, University of Dar es Salaam, Muhimbili University College of Health Sciences, Ministry of Agriculture and the Ministry of Lands, Housing and Urban Development. The Secretariat of this board would be the Local Knowledge Centre. Among other things, the functions of this board shall oversee the activities of the Centre and fix or determine the level of future royalties, compensation and other benefits payable to the originators or custodians of information.

2.3 Identification of LKS

Tanzania as a nation has a valuable, but largely untapped reservoir of LKS. Development planners and policy/decision makers are not aware of this situation and do not recognize the need to understand the existing knowledge systems. Local/indigenous knowledge systems are found in various sectors and fields. Before benefit-sharing systems and mechanisms are instituted it is crucial that these knowledge systems are identified, and what label they have whether confidential or of general knowledge, etc. These plus other attributes will determine the mode of compensation.

2.4 Identification of the knowledge system custodians

Before institutionalization of benefit-sharing system and mechanisms, custodians of the LKS must be identified. The whole exercise should start by searching and contacting key members of the community or the families that are regularly consulted because of their knowledge on a particular issue e.g. medicinal plants. The custodian may be an individual person, a group or a community itself. Although by the end of the day the entire community may benefit or gain from the compensation of an individual or group of people in the community, special attention should
be paid to a situation when an individual is being compensated for his contribution of LKS to the knowledge pool. This part will help to identify to whom the compensation is to be paid.

2.5 Solicitation of cooperation with custodians of LKS

Prior to the collection of LKS from their custodians an agreement must be reached. This means that the person collecting the information must first secure the cooperation of custodians since there is a major difference between general and confidential information. The custodians must be prepared psychologically and should not see the collector as a stranger, but as a friend. Where possible it should be made clear to the custodians of information, how the information is going to be used and how they will benefit from the whole exercise of volunteering to give out that information. It is important to know beforehand what to request and how to request it. Once a consent for cooperation has been secured the process of establishing systems and mechanisms for benefit sharing can start.

2.6 Establishment of a National or a Community fund

The first step to be taken by the Head of the established LK Centre under VPO is to establish a National or a Community Fund with a bank account used for depositing money accrued benefit sharing.

In order to facilitate implementation of the suggested actions and mechanisms, it is important to identify the main actors who will lead the implementation tasks. Table 1 gives the suggested actors for the various actions and mechanisms mentioned above:

<table>
<thead>
<tr>
<th>Suggested actions and mechanisms</th>
<th>Suggested actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of LK Resource Centre</td>
<td>VPO</td>
</tr>
<tr>
<td>Establishment of Board of the Resource Center</td>
<td>VPO</td>
</tr>
<tr>
<td>Identification of LKS</td>
<td>VPO, NEMC</td>
</tr>
<tr>
<td>Identification of the custodians of the knowledge system</td>
<td>Regional Resource Centres (RRCs)</td>
</tr>
<tr>
<td>Solicitation of cooperation with custodians of LKS</td>
<td>VPO, NEMC, Regional Resource Centres</td>
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<tr>
<td>Establishment of a national or a community fund</td>
<td>Regional Resource Centres</td>
</tr>
<tr>
<td>Payment of compensation and benefit sharing</td>
<td>Resource Centre Board</td>
</tr>
</tbody>
</table>

2.7 Establishment of regional resource centres

In order to facilitate the Center operation, regional or zone sub-Centres or offices should be opened in order to effectively coordinate and promote the activities of the Centre. Regional or zone offices will operate under the supervision of the Regional Administrative Secretary.

2.8 Payment of compensation and benefit sharing procedures

All information users (firms, companies, individuals, government, etc.) will have to declare to the LK Centre the profits made from the information use. The user of information will retain 50% of the profit and the remaining 50% will be distributed as follows: 40% will go to the originator or the information custodian and 10% will be retained by the Centre for its operations and the development of the community where information originated. Percentage payment seems to be the fairest method to use. The payment of royalties, compensation and benefit sharing is
necessary in order to boost up the morale and to attract custodians or originators of this valuable information.

The 40% will be paid directly to the originator of information, which could be an individual, a group of people within the community e.g., clan or ethnic group, or the community at large. For the non-profit organizations (e.g. government institutions which are mainly service providers), the government institution should negotiate through the LK Centre with the originator or the information custodian and pay the agreed amount. Alternatively the government should come up with a fixed amount to be paid as a fixed royalty by the non-profit making institutions to the originators of information.
3 BENEFIT SHARING AND TRADITIONAL KNOWLEDGE SYSTEMS

3.1 Examples of benefit sharing in LK

The importance of the local communities’ contribution for the protection and conservation of biological diversity has just recently started to be recognised, despite the fact that local communities have for years accumulated rich reserves of LK. People are now considering the need for benefit sharing especially if LK from the local communities is put into use. This move is necessary if local communities are expected to support conservation efforts for biodiversity protection (McNeely and Ness, 1996).

In Tanzania, analysis of the people’s perceptions of the socio-economic pressure on coastal forest resource use and management demonstrates that many people have no direct benefit or responsibility for the maintenance of the coastal forests. This is, since there is no recognition of their LK and they are denied access to some of their traditional forest utilities. The Convention for Biological Diversity (CBD) recognises the need to respect, preserve, and maintain knowledge, innovations, and practices of indigenous people and local communities embodying traditional lifestyles. This is clearly stipulated in Paragraph (j) of Article 8, which states that: “[Each Contracting Party shall, as far as possible and as appropriate] Subject to its national legislations, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wide application with the approval and involvement of the holders of such knowledge, innovations and practice, and encourage the equitable sharing of benefits arising from the utilization of such knowledge, innovations and practices.”

This approach can flourish if local communities are made protection partners, as well as beneficiaries of their own knowledge and information (Cruz, 1996).

There are many different types of LKS which cut across or are used in various sectors or fields e.g. in natural resource conservation and utilization (land, forest, game, fisheries, water, minerals etc.), medicine, veterinary, ecology, geographical information systems, agriculture, education, taxonomy, weather etc. There are few examples that can be quoted which the Institute of Resource assessment has intensively and extensively studied.

The importance of LK in the livestock sector is still eminent. Most farmers still practice traditional animal husbandry. Despite the availability of veterinary services, traditional and local methods for tackling livestock health problems and diseases are still practiced (Maeda-Machangu et. al., 2000). Among the Maasai community, for example, different practices and knowledge regarding the local environment, plants, animal species, and their products as well as their uses have been developed. Rural dwellers have been depending on plants for their health and their animals (Ole-Lengisugi, 1999). The local communities developed profound knowledge of making use of the ecological environment in which they are living. They also identified and named more that 100 medicinal plants species commonly used by the Maasai pastoralists to treat and control livestock and human diseases. Such knowledge is usually shared within the community and is passed on to the young generation by the experienced elders.

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2 Extracted from http://www.biodiv.org/socio-eco/traditional
3.2 The Matengo Pit System (Ngoro)

The Matengo pit system (Ngoro) is a good example of a relevant and effective LK which is unique in its ability to minimize soil erosion, water runoff and nutrient loss. This system is mainly practiced by the Matengo of Mbinga District, living on the steep slopes of the Matengo highlands. Ngoro is a pit that is surrounded by four ridges that are tied together. The purpose of this pit is to intercept and prevent destructive effects of surface runoff on the cultivated steep slopes. The Ngoro system is characterised by a combination of anti-erosion, soil fertility maintenance techniques of pit and ridges on the steep slopes and includes water conservation techniques. The system has enabled people to farm intensively in steep areas without a significant deterioration of land and without a decline in crop production.

The Ngoro/Matengo Pits system which incorporates organic matter was first developed between 1700 and 1750 (MOA, 1983). It was during this time that farmers realised that in places where soils from the pits were piled over grassy vegetation, produced more crops than where no grass were heaped and buried underneath. This was the indication that such soils were more fertile than the soil without the grass underneath. This system has so far sustained for a long time in the steep bare slopes on the Matengo Highlands (Matee, 2000).

3.3 The Ufipa Mounds farming or cultivation system

Another similar example is the Ufipa Mounds farming or cultivation system which is used by the Fipa people in Rukwa region to promote and restore soil fertility and to conserve water (Madulu, 2000). The system involves making compost mound whereby a piece of land with well established grass and bushy vegetation is slashed, collected and piled into heaps. The grass is covered with upturned soil resulting in cone-like heaps. The mounds are arranged at offset position in rows. There is a considerable variation in size of the mounds, the average size being between two to three feet high, three feet in diameter at the base and one to two feet between rows. In swampy or waterlogged areas, the mounds are made much bigger and higher than in other places to lower the water table. The practice involved crop rotation and rotation of cultivation methods starting with mounds, followed by flat cultivation by spreading the mounds. After spreading the mounds, flat cultivation is followed again by mounds. The latter which buries crop residues is succeeded by flat cultivation (Lunan, 1958; Wills, 1966). The main advantages of the Ufipa Mounds system are for the control of soil erosion, regulation of water table in the soil, retention or removal of surface water and improvement of soil fertility after decomposition of organic matter in the mounds.

3.4 The Iragw traditional farming system

The Iragw traditional farming system is another example of an old and widely utilised LKS used by the Iragw people in Mbulu district. The Iragw farming system has been in practice for a very long time before the German arrival in 1890. As a way of coping with the mountainous environment, the Iragw people evolved a farming system that took into consideration the steepness of the hilly environment and ensure that organic matter content and water are retained in the farms for good agricultural production. The traditional Iragw system involved construction of the storm drain across the upper part of the hills. The land was cultivated with a long digging pole that turned over the soil leaving the deeply broken surface to weather. During land preparation, ridges were formed, and commonly reinforced with household wastes and crop residues. In the process of ridging the soil was gradually cut down season after season forming terraces. The advantages of the traditional Iragw system are to conserve the soil from erosion, to improve soil fertility, and to arrest surface runoffs.
3.5 The traditional irrigation systems in Kilimanjaro region

There are indications that a traditional irrigation development in Tanzania dates back as far as history can trace. There is evidence of existence of very old elaborate irrigation systems built by local farmers, the Chagga, on the slopes of Mt. Kilimanjaro (Gutman, 1926; Grove, 1993). Traditional irrigation by the Chagga covered cultivation done mostly by peasant farmers in pre-independence days by diverting water using open, gravity furrows from springs, streams and rivers. Important crops grown under traditional irrigation systems were rice, maize, beans, bananas, sugar cane, yams and a wide variety of vegetables. Harry Johnston who led an expedition to Kilimanjaro in the early 1880’s reported that there was scarcely a ridge without its own irrigation channel (Grove, 1993). He marvelled at the skills with which the Chagga used tiny channels to irrigate the terraced hillsides. The ancient furrows received their water from either rivers or springs. Rivers canals drew the water from the river, as far as was necessary and feasible. The river water was guided into the furrow by means of stone dams, which let the remaining water seep through or remit it to run over stones. The permanent spring furrows collected the water at the source and took in all the water from the other source lying above the bed of the furrow. The usual practice is, the furrows are cut from the mountain streams often several kilometres above the inhabited areas, and the water is conducted to reach the individual settlements. Across the ravines water is directed by using hollowed tree-trunks placed horizontally and resting upon the other.

3.6 LK on what crops to grow in a particular area in Tanzania

Experience gained in Magindu village in Kibaha District in the coastal region shows that farmers are very keen about and know exactly what crops to grow, where, when, and how in relation to the prevailing environmental conditions of the areas. This knowledge is said to have been acquired from their ancestors and has been passed over verbally from one generation to another. Generally, the local agricultural knowledge is normally stored in people’s minds and often expressed and shared through the local languages. It is the older members of the villages who are custodians of this type of knowledge. The type of grass and trees growing in a particular locality show the most suitable crops to be grown in that areas, e.g. they say, Hyparenia rufa (grass specie) is a good indicator of an area for maize growing. Such knowledge is transmitted from one generation to another verbally by elders or through practice. Table 2 shows the soil type and their suitability for various crops (Kauzeni, 2000).

Table 2. Soil types and their suitability for various crops as recorded in Magindu Village

<table>
<thead>
<tr>
<th>Local names</th>
<th>English names</th>
<th>Suitable crops</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kiguzi</td>
<td>Reddish soils</td>
<td>Cassava, sorghum, cow peas, pigeon peas.</td>
</tr>
<tr>
<td>Nyachibu</td>
<td>Black clay soils</td>
<td>Maize, simsim, cotton.</td>
</tr>
<tr>
<td>Kisanga</td>
<td>Sandy soils</td>
<td>Cassava, pigeon peas, cow peas, potatoes.</td>
</tr>
<tr>
<td>Kilongo</td>
<td>Loamy black soils or black clay soils</td>
<td>Rice, cotton, sorghum</td>
</tr>
</tbody>
</table>

In Magindu village the local knowledge on environment, on timing of farm activities, on agricultural practices, on crop preservation and storage, and on livestock keeping was closely examined by Kauzeni (2000). Examining the local knowledge on the timing of farm activities showed that the local people in Magindu village have signals for the onset of rainfall. These include a certain position of the moon, the flowering of mango and cashew-nut trees, and the
various sounds made by birds especially in the morning. Other practices used by the local communities in Magindu village to ensure food security include shifting cultivation and intercropping.

Kauzeni (2000) concluded that blending local agricultural knowledge with scientific or modern knowledge could partly solve food security in the rural areas. Experiences such as traditional sun drying methods of grain legumes, cereals, roots, tubers and fish have been widely used in many traditional communities to enhance food security. Thus, nutritional status of many traditional societies could be maintained through consumption of a variety of food staples together with wild vegetables and fruits.

3.7 Other experiences

Uiso and Mahunnah (2000) explain the importance of green leafy vegetables as sources of nutrients in societies where consumption of animal based food products is low. They argue that green leafy vegetables and certain wild fruits are important sources of vital nutrients including pro-Vitamin A carotenoids. Through a wide use of varieties of food staples which are supplemented with wild leafy vegetables, many traditional societies have managed to maintain adequate nutritional status. In Mara Region, for example, about 38 edible wild fruits and vegetables and 53 cultivated food plants have been identified. These plants are important sources of nutrients, trace minerals and protein.

Another example is that of the Sandawe people of Kondoa District who developed their LK (methods and strategies) over years for beekeeping and hunting are environmentally friendly (Madulu, forthcoming). The local communities through use of LK have maintained a system of exploitation that ensured a dynamic ecological equilibrium and the continuous availability of essential forest resources. Traditionally, the Sandawe are hunters and beekeepers, hence, they need the forests for the survival of their culture. The local knowledge generated is shared through inheritance, story telling and apprenticeship. The young generations learn from the old through actual participation in the activities.

These examples justify the importance of local knowledge both in ensuring food security and environmental protection. It has been clearly observed from these examples that LK is largely transmitted from one generation to another through oral and practical means. In so doing local communities have managed to share the important LK without any major difficulties.
4 CONCLUSION

Developing countries and Tanzania being one of them, have a valuable, but largely untapped, reservoir of local natural resource experience and LKS. There is a growing interest at the national and international levels in the role that local/indigenous knowledge plays in participatory approaches to development. It has been realized that development and the preservation of LK are not contradictory. Research is generating more and more data showing the relevance of LKS for sustainable development. Moreover, interest in LK has been expressed in various institutions and in a growing number of academic disciplines. This is the right time for the maintenance of the impetus for the growing interest in local/indigenous knowledge systems.

For the country to get the maximum benefit from LKS, the legal recognition of the Intellectual Property Rights pertaining to the knowledge systems is imperative. More important, the local communities that share their LKS can also share the benefits that accrue from those LKS. In order to secure cooperation and willingness of the custodian of LKS to volunteer information on these systems, these custodians must share the benefits realized from those systems. There is a number of benefit sharing models used in various countries which may be emulated. One of these models could be the establishment of a National or Community Fund.

Mechanisms for benefit sharing must be created in order to maintain the morale and cooperation of the custodians of the LKS. There must be an institution charged with the responsibility of dealing with all issues pertaining to LKS including benefit sharing by the custodians or originators of LK. This situation calls for the establishment of the National LK Resource Centre. As the potential contribution of LK is increasingly being recognized, more and more national LK resource centres are being established worldwide.

Efforts to achieve the promotion of sustainable development within the framework of Agenda 21 of the Rio Summit should be based on re-examining and applying LK and techniques, as opposed to the wholesale importation of Westernised methods and ideas. The aim should be to attain the optimum combination of the best practices from traditional and modern knowledge, but at the same time interests of custodians of the LK in terms of benefit sharing must be kept in the forefront. It is also important to note that traditional knowledge must be understood in its cultural context. Local participation is crucial to the success of development interventions. A new partnership must be forged among indigenous peoples, national governments, and international development agencies.
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