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TRADITIONAL RELATED KNOWLEDGE AND THE CONVENTION ON BIOLOGICAL DIVERSITY

Contribution by the Executive Secretary to the preparation of the Report of the Secretary-General for Programme element 1.3 of the Intergovernmental Panel on Forests

Note by the Secretariat

1. In paragraph 2(a) of decision II/9, the Conference of the Parties requested the Executive Secretary to provide advice and information pertaining to the relationship between indigenous and local communities and forests, as invited by the Inter-Agency Task Force of the Intergovernmental Panel on Forests.

2. Such advice and information would contribute to the preparation of the Report of the Secretary-General 'Traditional forest-related knowledge' to be considered by the Intergovernmental Panel on Forests, under Programme element 1.3 of its programme of work.

3. In early 1996 the Secretariat assisted the secretariat of the Ad Hoc Intergovernmental Panel on Forests in the Division for Sustainable Development of the Depertment for Policy Co-ordination and Sustainable Development of the United Nations Secretariat with the preparation of document E/CN.17/IPF/1996/9 ('Traditional forest-related knowledge') for the initial discussion of this Programme element by the Panel at its second session (Geneva, 11-22 March 1996).

4. At its second session, the Panel undertook an initial discussion of this Programme element, considered the report contained in the document E/CN.17/IPF/1996/9, and provided guidance on the focus of the substantive discussion at its third session and on specific matters that should be addressed (document E/CN.17/IPF/1996/24, paras.83-95).

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5. In accordance with decision II/9, and noting the guidance provided by the Panel at its second session, the Secretariat has prepared a further background document on traditional forest-related knowledge as a contribution to the preparation of the Report of the Secretary-General for the substantive discussion of this Programme element by the Panel at its third meeting (Geneva, 9-20 September 1996).

6. This backround document is contained in the Annex to the present note. Annex TR ADITIONAL FOREST-RELATED KNOWLEDGE

Contribution by the Executive Secretary to the preparation of the Report of the Secretary-General for Programme element 1.3 of the Intergovernmental Panel on Forests

CONTENTS

EXECUTIVE SUMMARY

1. Traditional forest-related knowledge (TFRK) is made up of the following linked features:

* information about the various physical, biological and social components of a particular forested landscape;

* rules for using them without damaging them irreparably;

* relationships among their users;

* technologies for using them to meet the subsistence, health, trade and ritual needs of local people; and

* a view of the world that incorporates and makes sense of all the above in the context of a long-term and holistic perspective in decision-making.

2. These aspects of TFRK have various kinds of meaning and potential usefulness to global society, but most of the knowledge concerned cannot, and the rest should not, be taken from its owners without their consent. It must therefore be accessed through negotiation and partnership. Most TFRK will mean little outside the environment where it arose, however, and is likely to be most valuable only as a means to achieve on-site sustainable forest management. To do this requires that the owners of TFRK are involved in:

* ownership partnerships, in which local people and the state agree ownership regimes for forest land;

* planning partnerships, in which traditional and other forms of knowledge are used together in making decisions on the use of forests; and

* management partnerships, in which the partners collaborate to put their plans into effect.

3. Stumbling-blocks here include misunderstandings arising from cultural differences, and solutions include mutual respect and shared learning, aided by mechanisms for conflict resolution. The process requires that certain kinds of authority over forest resources are re- distributed to allow local participation, as is now happening in some countries.

4. Some forms of TFRK have meaning outside their local context and can have a role in commercial biodiversity prospecting. They can be made available on a contract basis between the owners and prospectors. National framework laws and international agreements are required to render such contracts enforceable, and to establish fair and equitable benefit-sharing arrangements. Patent laws can then continue to protect the investments required to develop new products.

5. Other forms of TFRK, including plant varieties, planting and harvesting systems, technologies and world-views have less or no commercial potential but are nevertheless the intellectual property of their originators and owners. To protect this interest, an holistic approach to intellectual property is needed, the aim of which would be to ensure a fair return rather than to exclude or monopolise. National framework laws and international agreements are needed to establish the right of collective

ownership of such knowledge. Further study and consultation is needed to define the wording of such laws and agreements, but once they are in place the owners of TFRK can then make their own choices about whether, when and how to share it with others.

6. Since most TFRK cannot usefully be digitised, the role of computer database technology will be limited mainly to the sharing of anecdotal information through the Internet, and certain specific tasks linked to biodiversity prospecting. In these cases, translation and data security are respectively the main design issues. Digital mapping (using GIS and GPS) combined with social mapping will have an important role in establishing forest ownership, planning and management partnerships, and anecdotal information can be culturally and geographically located in the same system to assist in forest management tasks. Precise design specifications await further study and consultation with TFRK owners and potential users.

7. It is suggested that governments give priority to finding ways to ensure:

* that groups possessing TFRK are recognised in law so that they can enter into access agreements concerning TFRK;

* that the TFRK concerned is recognised in law as the common property of the group entering into the access agreement;

* that all access to TFRK is through an access agreement with its owners, where these can be identified;

* that access agreements define terms for the three main circumstances in which access to TFRK might be sought, these being: (a) where the aim is to manage a forest by partnership between the people who live there and the government; (b) where the aim is to invent patentable products for commercial use; and (c) where the aim is to share knowledge freely with others.

8. The main obstacle to achieving such settlements is likely to be a reluctance to recognise the ownership of TFRK because of the need then to negotiate consensual agreements with its owners. International fora, including the Intergovernmental Panel on Forests, provide an opportunity for governments that have taken this path to reassure others that TFRK is indeed useful in managing forests sustainably and in locating valuable new products, and that accessing it on fair and equitable terms can only benefit each country in its efforts to achieve sustainable development.

A. INTRODUCTION

9. By its decision 1995/226, the Economic and Social Council decided, upon the recommendation of the Commission on Sustainable Development, to approve the establishment of an open-ended ad hoc intergovernmental panel on forests. The Panel is to pursue consensus and formulate co-ordinated proposals for action to support the management, conservation and sustainable development of forests.

10. The Commission included as element 1.3 of the programme of work for the Panel:

"Consistent with the terms of the Convention on Biological Diversity, encourage countries to consider ways and means for the effective protection and use of traditional forest-related knowledge, innovations and practices of forest- dwellers,

> indigenous people and other local communities, as well as fair and equitable sharing of benefits arising from such knowledge, innovations and practices."

11. The first session of the Panel decided that "[preparation] for this programme element should take the broadest possible view and should address the full mandate assigned to the Panel by the Commission on Sustainable Development. Preparations for the documentation to the Panel should have the full benefit of, and should establish links with, the work of the second and third sessions of the Conference of the Parties to the Convention on Biological Diversity" [ref-IPF1 report].

12. The second meeting of the Conference of the Parties to the Convention on Biological Diversity, in its decision II/9, invited its President to transmit to the Panel a statement on biological diversity and forests, and requested the Executive Secretary to "provide advice and information pertaining to the relationship between indigenous and local communities and forests" to the Panel. Accordingly the secretariat to the Convention on Biological Diversity, in consultation with the secretariat of the Panel, prepared the document 'Traditional forest- related knowledge' (E/CN.17/IPF/1996/9) for the initial discussion of this programme element at the second session of the Panel. The statement for the Conference of the Parties to the Convention on Biological Diversity to the Panel was also transmitted to the second session (E/CN.17/IPF/1996/9, Annex).

13. At its second session the Panel emphasised that the substantive discussion should focus principally on the terms of reference for this programme element as determined by the Commission on Sustainable Development, taking into account the relevant paragraphs of the Forest Principles and the relevant chapters of Agenda 21, as well as taking account of other relevant intergovernmental processes, in particular the Convention on Biological Diversity (E/CN.17/IPF/1996/24, paras.83-95).

14. Relevant chapters of Agenda 21 include chapters 11 ('Combating deforestation') and 26 ('Recognising and strengthening the role of indigenous people and their communities'). The following principles of the Forest Principles are also relevant:

> 2(d): "Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organisations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies".
>
> 4: The vital role of all types of forests in maintaining the ecological processes and balance at the local, national, regional and global levels through, inter alia, their role in protecting fragile ecosystems, watersheds and freshwater resources and as rich storehouses of biodiversity and biological resources and sources of genetic material for biotechnology products, as well as photosynthesis, should be recognised.
>
> 5(a): "National forest policies should recognise and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers. Appropriate conditions should be promoted for these groups to enable them to have an economic stake in forest use, perform economic activities, and achieve and maintain cultural identity and social organisation, as well as adequate levels of livelihood and well-being, through, inter alia, those land tenure arrangements which serve as incentives for the sustainable management of forests".
>
> 12(d): "Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and

> financial support, and in collaboration with the people in local communities concerned, be recognised, respected, recorded, developed and, as appropriate, introduced in the implementation of programmes. Benefits arising from the utilisation of indigenous knowledge should therefore be equitably shared with such people".

15. Recalling the terms of reference given by the Commission on Sustainable Development for this Programme element, the following Articles of the Convention on Biological Diversity are also relevant. By these, Parties agree, as far as possible and appropriate, and subject to national legislation, to:

> 8(j): "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices".
>
> 10(c): "protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements".
>
> 18(4): "encourage and develop methods of co-operation for the development and use of technologies, including indigenous and traditional technologies, in pursuance of the objectives of this Convention".

16. The Preamble to the Convention similarly recognises:

> "the close and traditional dependence of many indigenous and local communities embodying traditional lifestyles on biological resources, and the desirability of sharing equitably benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the sustainable use of its components".

17. At its third meeting in November 1996 the Conference of the Parties to the Convention on Biological Diversity will consider ways and means to implement Article 8(j). It will also examine the links between between forests and biological diversity in accordance with its decision II/9, paragraph 2(b).

18. The present report, prepared by the secretariat of the Convention on Biological Diversity, in consultation with the secretariat of the Panel, seeks to provide the basis for substantive discussion of this programme element by the Panel at its third session, in accordance with the guidance provided by the Panel at its second session (E/CN.17/IPF/1996/24, paras.83-95). Documents and other data referred to in the preparation of this report are listed in Annex 1. The secretariats also received valuable contributions in the form of submissions from governments, from other organisations with relevant expertise, and from individual experts.

19. The report seeks to provide further information on those matters identified by the Panel at its second session as being of special relevance to the substantive discussion of this Programme element, in particular those referred to in paragraphs 89 and 90 of its Report (E/CN.17/IPF/1996/24). The approach assumes that no ecosystem can be managed sustainably without ecological knowledge and

clear management aims. The knowledge involved may be drawn from global or local experience, while the management aims are determined by the society doing the managing, based on its own sense of priorities. The members of each such society can be thought of as partners in a common endeavour. Where people belonging to different societies influence forest management aims at the same time, the clarity of those aims can be lost unless partnerships exist among relevant stakeholders. How to create and operate such partnerships is thus just as critical an issue in sustainable forest management as how to obtain and use knowledge, whether traditional or otherwise.

20. Partnerships by definition are based on free negotiation, informed consent and agreement among equals. The focus in this report on a partnership-based approach follows the presumption in favour of participatory management regimes adopted by the Forest Principles, by Agenda 21, and by the Convention on Biological Diversity, among others, and also by the growing recognition that non-participatory management regimes have a poor record of maintaining viable forest ecosystems.[1] The range of possible partnerships in forest management include those between nations, nations and corporations, nations and local people, or between other combinations of stakeholders depending on circumstances.

21. Section B of the report provides a general overview, including a review of technical, economic and social issues arising. Sections C and D provide a review of progress and status, and obstacles to further progress. Section E recalls the issues that the Panel, at its second session, identified as meriting further development and that should be addressed during substantive discussion, and offers conclusions and a set of recommendations for specific action. Working definitions of terms used in this report are contained in Annex 2.

B. GENERAL OVERVIEW

a) The nature of traditional knowledge

22. Traditional forest-related knowledge (TFRK) is a sub-set of traditional ecological knowledge (TEK), which is in turn a sub-set of traditional knowledge (TK), all these terms being commonly used. Knowledge is the information held in human memories that is accessible, by recall and the practice of learned skills, in a useful way in day-to- day life. In the context of TK it is often used to mean wisdom, which implies a blend of knowledge and experience integrated with a coherent world view and value system. Traditional means handed down from one generation to another, and in the case of TK usually means knowledge that has been accumulated by societies in the course of long experience in a particular place, landscape or ecosystem. It can be contrasted with cosmopolitan knowledge, which is drawn from global experience and combines 'western' scientific discoveries, economic preferences and philosophies with those of other widespread cultures.

23. The open-endedness of these words helps to explain the diversity of the literature on TFRK, which encompasses the spiritual experiences, philosophies, politics, technologies, subsistence activities and external relations of all forest-dwelling peoples whose lifestyles are strongly influenced by their own traditions, and who are often included within the broad category of indigenous people. (However, not all those who possess TFRK are indigenous in the sense implied here and in the usage of other fora. Principle 5(a) of the Forest Principles recognises this when it distinguishes between 'indigenous people [and] their communities' and 'other communities and forest dwellers'. This distinction will be explored below.) From an ecological point of view, a key distinction is that between ecosystem people and biosphere people. Ecosystem people draw resources from a limited

area using their own muscles or those of their livestock, while biosphere people draw resources from all over the world, using other sources of energy.[2]

24. TFRK is chiefly an attribute of ecosystem people, who are intimately associated with particular forested landscapes and have had the opportunity to learn about them over time. Cosmopolitan knowledge, by contrast, is associated with biosphere people, and is their main tool for using the world's resources. The replacement of ecosystem people and traditional cultures by biosphere people and cosmopolitan cultures has been a major world-wide theme of the last 10,000 years, and especially of the last 500. Ecosystem people often become ecological refugees once displaced from the environment to which their culture is adapted.[3] Meanwhile, biosphere people have tended to replace local species and cultivars with a limited number of homogeneous crop plants, resulting in the erosion of biological diversity that is now underway.[4]

25. Working definitions of traditional knowledge stress the links among traditionality, cultural distinctiveness and the local environment to which each culture is adapted. To clarify this linkage, we can imagine a semi-isolated forest-dwelling population developing an increasingly distinctive set of cultural features over time. This process is driven partly by the group responding to its environment, and partly by the insights and creativity of its members. Embedded in the distinctive culture will be much information concerning the physical and biological processes of the landscape, its seasons, soils, plants and animals, and their relationships, behaviours and forms of usefulness.

26. The most valued kinds of knowledge will be those that help people feel secure by meeting subsistence needs or by explaining phenomena that would otherwise be mysterious and threatening. This information will mostly be collected by direct careful observation, but without access to cosmopolitan forms of equipment, experimentation or techniques of data analysis. Even so, few mistakes will be made because of the long investment in observation, and also because of the strong incentive to discover truths that result in subsistence or social opportunities. These incentives will also encourage people to invent new techniques and new perceptions of how phenomena relate to one another, including the use of dreams, trances and other forms of spiritual exploration.

27. As people use a forest ecosystem they may learn how to harvest its resources without destroying it as a whole, even while changing its structure and species composition through selective planting, weeding, coppicing, burning and fallowing. For each place and level of technology, a stable relationship may arise between forest and society, but this stability will not survive the introduction of new hunting techniques (e.g. firearms), tree-felling equipment (e.g. chainsaws), or trading opportunities (e.g. roads and markets). Traditional forest- dwelling people, however, use many species in many different ways, according to many different social rules. Some aspects of each approach are likely to be more resilient than others, and these will tend to have most to teach other societies about sustainable forest management.

28. For any given level of technology, resources that are exclusively used by small numbers of people who cooperate with one another are safer than those used by many, competing people. Thus, any measure that limits to a particular group the right to exploit a living resource will tend to promote its sustainable use. This is because the group with access to the resource will have more opportunity than others to learn about it and how to use it productively. That group will also have an incentive to use it for their own long-term benefit and hence cautiously and more- or-less sustainably. Exclusive access, knowledge and a long-term perspective are the key ingredients that may allow the sustainable use of resources. This depends, however, on the social rules that govern access remaining in force, and on the technology changing no faster than the social rules can adapt to it.

29. As a group accumulates TFRK, they will develop a culture that is increasingly distinct from all others. Many similarities will persist, however, due to common cultural and genetic inheritance from other peoples, and adaptation of other groups to the demands of similar ecosystems. Each culture thus contains some traditional knowledge that is uniquely local, and some that is shared widely. The two kinds are deeply intermingled and embedded in the culture as a whole. Most elements will make little sense if they are removed from a cultural context, for example when stored in a computer database. Many can pass easily into new cultural contexts, however, if the recipient culture is open to new ideas and particularly if it has grown up in a similar environment in which the imported concepts make sense. Thus, cultures in contact with one another often exchange fragments of their traditional knowledge, especially if the cultures concerned are supported by similar ecosystems and have friendly relations with one another. Transmission is more difficult where the environment differs considerably, as between urban or agricultural societies and forest-dwelling ones, or where hostility between cultures exists.

30. Thus, in summary, it is suggested that TFRK is made up of the following linked features:

* information about the components of a particular forest ecosystem, such as its soils, trees, animals, streams, hunting grounds, old fallows and sacred sites;

* rules for using them;

* relationships among their different users;

* technologies for using them to meet the subsistence, health, trade and ritual needs of local people;

* a view of the world that makes sense of such information, rules, relationships and technologies in the context of a long-term and holistic perspective in decision-making.

31. These aspects of TFRK have different kinds of meaning for global society, and can be used in various ways. New data about forest ecology or the behaviour and growth rates of forest organisms, for example, might suggest new ways to design, implement and monitor forest management systems. Sharing TFRK might help forest managers avoid procedures that impact unnecessarily on local social systems. Rules on how to grow and harvest forest organisms or to use forest soils without damaging them might improve forestry and agroforestry systems. Clues on how to keep harmonious social relations among competing groups might help relieve stresses in other societies, including urban societies. Traditional technologies may be more benign environmentally or socially than newer ones, and might be used more widely. Finally, a world view that stresses linkage among natural and human phenomena and that values inter-generational equity and future well-being can only promote sustainable development.

32. All this raises three issues for nations that wish to find ways to use TFRK in forest management:

* First, little of the knowledge will be meaningful outside its local context, so only some is likely to be helpful in solving practical problems elsewhere.

* Second, most TFRK is so deeply embedded culturally that it can only be retrieved by traditional means such as the trances of shamans, healing rituals, dances, stories, initiations and other practices that are not amenable to scientific study.

* Finally, the aim of promoting cultural transmission of TFRK from traditional societies to cosmopolitan ones requires that the former are willing to give and the latter to receive new ideas. This requires mutual respect and understanding, and cannot occur while feelings of inequality persist between the two kinds of society.

b) Traditional knowledge and property rights

33. An increasingly large part of the global economy is now based on buying and selling information, so the nature and future of intellectual property is often considered a central issue. This can obscure the fact that all economic activity rests ultimately, and for most people directly, on management of real ecosystems, the abuse of which has real rather than virtual consequences for real people. Even so, intellectual property is an important issue that impacts on the use of TFRK in several ways.[5]

34. There are two main themes within the cosmopolitan approach to intellectual property. First, patent laws have been devised to create temporary monopolies in the supply of certain novel goods and services. The aim of these is to safeguard the investments that often lead to technical and product innovation in an industrial context. Patent laws typically require that to be eligible for protection an invention must be new, useful and non-obvious, and it must be described in detail in the application. These requirements appear to rule out the patenting of naturally-occurring items that have not been modified by people, but this exclusion is narrowing in the light of court rulings and international agreements. The Trade-Related Intellectual Property Rights agreement within the General Agreement on Tariffs and Trade, for example, allows countries to exclude "plants and animals other than micro-organisms" from patentability (Article 27(3b)), but this sub- paragraph will be reviewed in 1999.

35. The second theme involves the creation of rights to plant varieties that have arisen as a result of selection by people. The different, but complementary in intent, concepts of 'plant breeders' rights' and 'farmers' rights' are designed to protect a general interest in the use of varieties. This intent is not to exclude or monopolise, but rather to promote sharing, use and further development of the varieties concerned while recognising the original source of materials.

36. Alternative intellectual property rights regimes suitable for the needs of local communities that collectively possess TFRK have been proposed, taking into account the way in which traditional knowledge is acquired as common property of a people and is hence an integral and inalienable feature of their culture. One such proposal[6] rejects the application of industrial patent law to innovations based on TFRK, and seeks to resist the turning of traditional knowledge into a traded commodity because this can erode community solidarity. It asserts that commercial use of TFRK can occur but only at the absolute discretion of its owners, and that the state's main role is to safeguard and protect the rights of those owners. It also describes a Community Intellectual Rights Act to cover all uses of traditional knowledge. This and other proposals show the extent to which current views on property, innovation and trade may have to be reconsidered if the views of indigenous and traditional communities are to be reflected in global agreements. The balance of opinion is to reject the application of patent law to TFRK itself, while accepting its usefulness and suggesting improvements where particular inventions are based on TFRK and developed to marketability (e.g. in the case of certain pharmaceutical products).

37. It is also suggested that the concept of plant breeders' rights be revised and extended to apply to traditional knowledge systems, creating national sui generis (unique) arrangements for recognising a general interest of the owners in each knowledge system as a whole. Several authors stress that such rights must reside in groups rather than individuals, since traditional knowledge arises through the efforts of past, present and future members of a particular society. The concept of 'farmers rights' as defined in FAO Resolution 5/89 and the provisions of the Convention on Biological Diversity support this view. Furthermore, it would not be ethical to employ an individual to reveal traditional knowledge without the consent of the society involved. Since TFRK cannot otherwise be taken from its owners involuntarily, and the owners are the group, it must be correct for group ownership to be recognised in law and for access to TFRK to occur only by agreement between the owners as group and the person or institution seeking to obtain access.

38. If TFRK is to have a role both in maintaining the way of life of the people who possess it, and in managing forests sustainably, then certain conclusions follow and need to translated into both policy and practice. Since TFRK cannot reasonably be taken from people without their consent, and is the common property of distinct groups of people, this should be acknowledged by governments and others who wish to use such knowledge. This means that governments should recognise TFRK-owning groups as being legally able to enter into agreements by which their knowledge can be accessed, and encourage the negotiation and operation of such agreements.

39. The three areas in which access agreements seem necessary are as follows:

* First, if forest-dwelling people are to be involved other than as labourers in managing the forests where they live (as must be the case if TFRK is to have a role), this should be based on partnership agreements. Since the use of any resource needs clarity concerning its ownership, plans for its use, and management of that use, managing an inhabited forest will require ownership, planning and management partnerships.

* Second, if forest-dwelling people are to be involved in biodiversity prospecting (as they must be if TFRK is to be used to identify materials with commercial potential), this should be based on agreements that guarantee a fair return from any resulting commercial application.

* Finally, if forest-dwelling people are to share their ideas and experiences with others, this should be based on agreements that allow them to control the release of information and that acknowledge their contribution.

40. Partnerships involve agreement and co-operation between people who are equals but have complementary needs, so the negotiation of partnership agreements for managing forests has the implication that local people, governments, researchers, interested public and private sector enterprises and all other interested relevant parties will treat one another respectfully. This applies equally to biodiversity prospecting and other research contracts. In any contractual arrangement it is up to the parties to decide what is 'fair', but minimum standards can be mandated by law, and communities and governments can cooperate to enforce the contracts and to deter unethical practice.

41. The issues of forest management partnerships, biodiversity prospecting and information-sharing are discussed below. Meanwhile, the general role of national governments in this system can be identified as being to formulate framework legislation to establish:

i) procedures for recognising and establishing group identity and group ownership;

ii) the need for access agreements;

iii) the nature and minimum terms of those agreements, including that access be on mutually agreed terms and subject to prior informed consent. National framework legislation should also clarify such matters as jurisdiction and procedures for enforcement and the settlement of claims. The role of the global community, meanwhile, would be to agree on measures by which nations can cooperate to facilitate the operation of access agreements to universal advantage.

c) Key distinctions in forest management

42. In its recommendation to establish the Panel, the Commission on Sustainable Development recognised that a central concern is to avoid further damage to natural forests by unsustainable human activities (E/1995/32, para.200). As the Panel noted at its second session, the underlying causes of such damage are diverse, inter-related and rooted in social, economic and political events that extend beyond the forest management sector or the locations of forests themselves. Enough is known about the causes of forest damage to define a simple framework that takes into account the nature and potential role of TFRK as well as contemporary forest science. Thus, a country's forest estate can in principle be divided into inhabited and uninhabited areas, though this may be difficult in practice (Figure 1).

43. Inhabited forest areas are subject to customary rights, located within indigenous lands and territories, or are used by forest-dwelling people, while uninhabited ones are not encumbered by such usage or ownership claims. However the notion of uninhabited forest areas should be viewed with extreme caution for two reasons. Firstly, there continue to be cases of national governments becoming aware of the existence of isolated indigenous forest-dwelling communities in areas considered uninhabited. Secondly, the areas effectively utilised by many indigenous and traditional communities for hunting, collecting or ceremonial purposes are often far more extensive than governments and planners recognise.

44. If such uninhabited areas exist, the nation as sole owner of the resource could, if appropriate, enter directly into planning and management partnerships with other actors (national or international) in order to use the forest in accordance with its national policies and with internationally agreed guidelines and best practice.[7] The aim of such partnerships would be:

* to allocate forests to different kinds of use (the spatial planning process);

* to manage them for protection, production of timber, watershed benefits, tourism revenues or for biodiversity prospecting (the management process); and

* to ensure that the planned use of one area does not adversely affect the use of other areas (the environmental impact assessment or EIA process

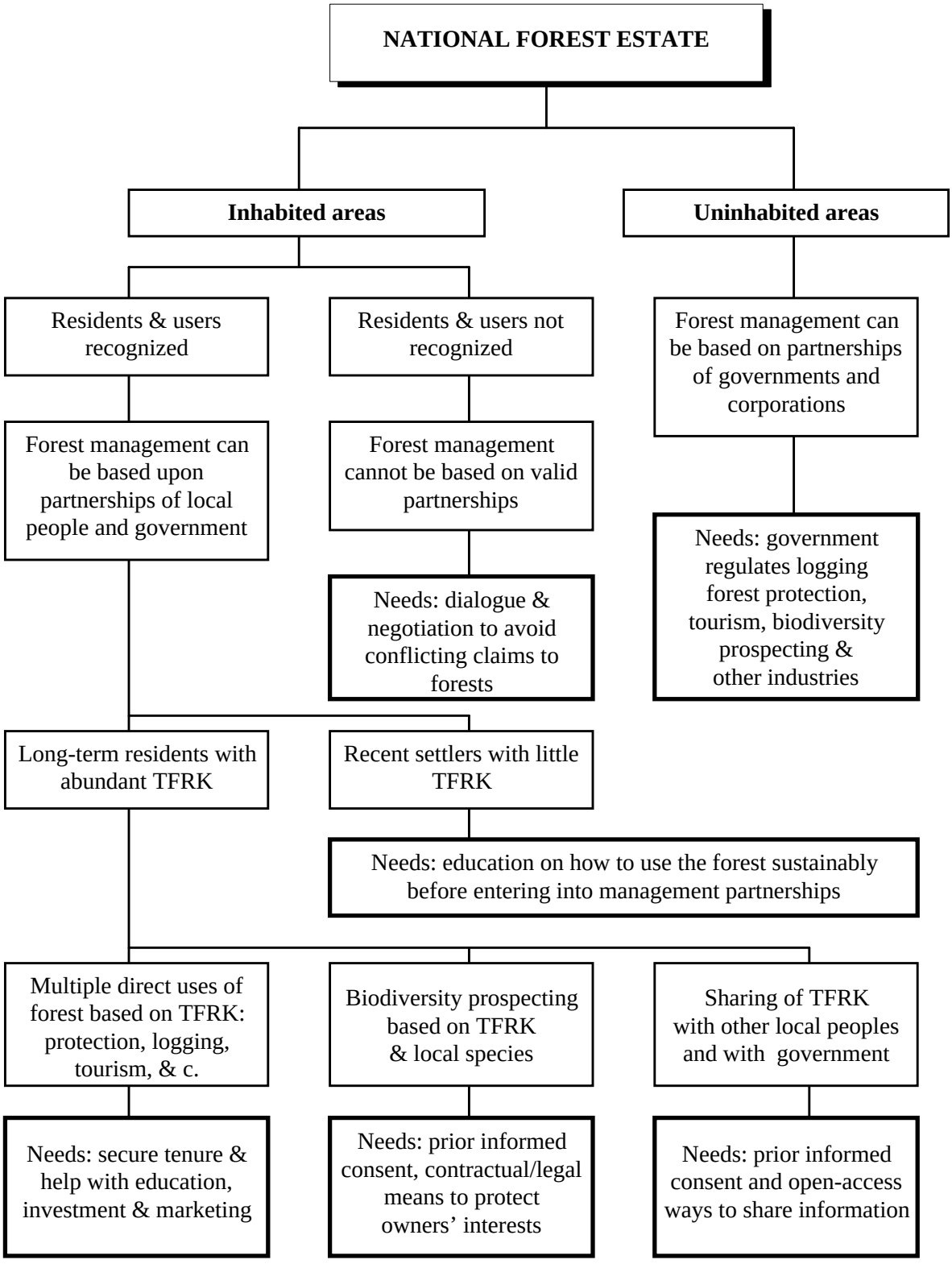

Figure 1: Key distinctions in forest management.

45. If areas that a state sees as uninhabited are claimed by others as inhabited, a conflict of interest will occur if the state then allows the forest to be used in ways that are incompatible with the needs of claimant groups. Such conflicts involve competition for the control of territory or access to resources. If one or both sides think that their vital interests are at stake, dialogue and compromise can be elusive. This is why such disputes are often resolved by power contests, resulting in the uncompensated expropriation of the assets of the weak by the strong. Recent examples of this process and its outcome can be found throughout the world.

46. One way to avoid and resolve conflict without a power contest involves the careful management of four steps. The basis of any claim must first be understood both in the terms of the people making the claim and also on the basis of studies using cosmopolitan methods (step 1). Recognition of the existence of the claim may then follow (step 2), allowing negotiation of a settlement (step 3) and re-formulation of management partnerships (step 4).

47. Some obstacles to this process and ways to overcome them are discussed in Section D., but no universal rules apply other than that agreement is more likely if all sides respect one another and act accordingly. As the locations of all habitations and associated claims to use the forest in a country are recognised, the full extent of human occupancy of its forest estate will become clear. Where occupation is established, it is possible for government to take advantage of the fact by establishing partnerships with local people to manage the forest sustainably (Figure 2). This is the main context in which TFRK can be of use to governments.

48. There are three general options for local people to use their knowledge to help achieve sustainable forest management:

* First, TFRK may be involved in the direct management of local forests.

* Second, TFRK and local species may be used in the process of biodiversity prospecting.

* Finally, good ideas on forest management derived from TFRK can be shared with others.

49. None of these options can be accomplished entirely without external communications, technical assistance, investment or access to markets, so a partnership approach is appropriate to all three. They have different technical and capital requirements, however, and have different consequences for the flow of benefits. The rest of this report describes the implications of this in all three cases, explains how appropriate arrangements can be made, reviews progress, identifies barriers to further action, and suggests way in which they might be overcome.

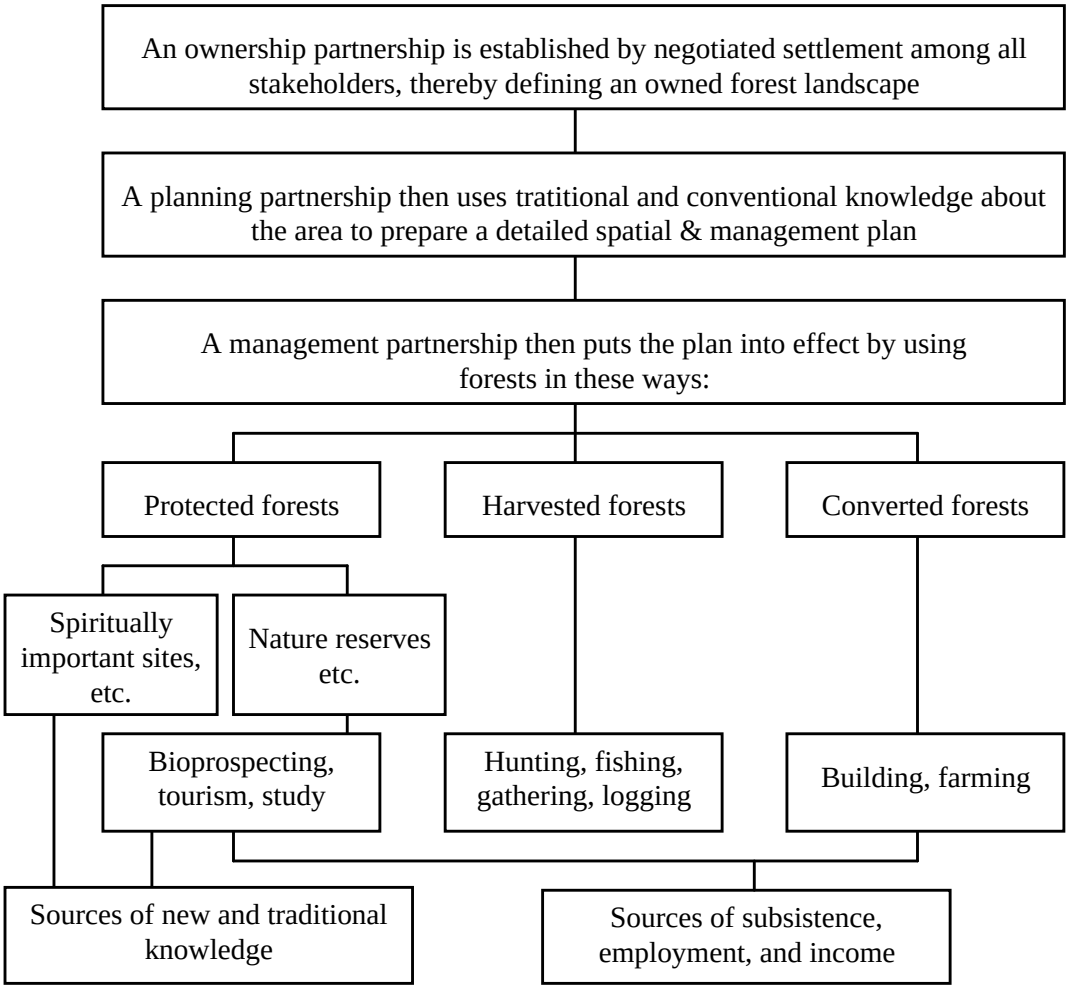

Figure 2: Managing inhabited forested landscapes.

C. RECENT PROGRESS AND STATUS

a) Direct management of forests

50. Figure 2 traces the sequence of events that can lead to sustainable management of an inhabited forested landscape. It is envisaged that this would begin with the agreement of an ownership partnership for the landscape concerned. This means an arrangement that recognises the complementary roles of government and local people in the area concerned, and that lays down procedures for dialogue and the settlement of claims among them. This can have policy implications as it relates to the distribution of responsibility for forest management.

51. Descriptions of decentralisation and conservation processes in Colombia, Costa Rica, India, Indonesia, Kenya, Nepal, Nigeria, the Philippines, Russia and Zimbabwe are contained in a recent World Bank study.[8] The study concluded that local empowerment and the strengthening of local institutions are preconditions for managing ecosystems according to local needs using TFRK, but the forms they take vary greatly and cannot be prescribed in detail. The study came to four main conclusions, which should be borne in mind during any process of decentralisation since they can generate serious risks both to people and to forests.

* First, precipitate and unplanned decentralisation can neutralise national and global influence, while giving powers to local societies that may lack adequate skills and accountability to use those powers properly.

* Second, redistributing power may be seen as a threat by some groups, prompting them to resist change. Thus, mediating bodies trusted by all sides will be needed to smooth the transfers of power, and support from law and policy are needed to help the newly-empowered locality sustain itself.

* Third, there is the risk that a locality that is no longer sheltered by a national government may become vulnerable to groups wishing to exploit it. Where national governments are no longer able to control such threats, localities must be helped to communicate and collaborate to prevent them from being singled out and overwhelmed one by one.

* Finally, uncertainties in the process mean that there is always a risk that the need to protect nature reserves may be forgotten for a time. In the tropics especially, irreversible damage to the components of biodiversity can occur swiftly, so resources for protecting reserves must be supplied throughout.

52. Once a settlement of the ownership partnership has been achieved, planning partnerships can be established. Here, stakeholders collaborate to understand the landscape using both traditional and global approaches to the discovery and use of knowledge.[9] Examples of this process include the planning of multiple-use landscapes in East Kalimantan, Indonesia, and in the Canadian Arctic, based on social mapping, participatory rural appraisal, and global positioning and geographical information systems (GPS/GIS). Such procedures also involve adopting guidelines for managing the landscape's ecosystems sustainably for various purposes, and adapting them to local conditions in the light of traditional and other knowledge. Detailed rules for operating a management partnership should emerge from this process, helping to guide the landscape's use in practice.

53. There are three main options for using land in a forested landscape: * as converted forest (e.g. for farms, tree plantations, buildings and other infrastructure); * as harvested forest (e.g. for logging, hunting, fishing and gathering); and * as protected forest (divided into sacred areas that cannot ordinarily be used by living people, and nature reserves that can be used for such purposes as tourism, biodiversity prospecting, education and research).

54. There may be some overlap between these categories (e.g. some parts of a nature reserve might be available for hunting and gathering, but not for logging), and detailed zoning may be required depending on planned use (e.g. for stand-specific logging regimes). The emphasis will also vary among locations depending on the outputs sought, ranging from biodiversity protection to subsistence use (harvesting wild meat, medicinal plants, food plants, etc.), ecotourism (harvesting

revenue from visitors interested in nature and local culture), precision logging (e.g. felling rattan canes or special woods), and logging for general- purpose timber. The details cannot be prescribed, and must emerge from dialogue among knowledgeable people in the context of planning and management partnerships.

55. Cases where all steps in this process have been followed, so that governments and local people have worked as partners in forest management, include 'conservation areas' (i.e. large multiple-use landscape units with an emphasis on sustainable use of resources) in Nepal, Australia, the USA, Canada, Indonesia and Costa Rica.[10] The same principles apply to reforestation (e.g. Joint Forest Management areas in India)[11], wildlife management (e.g. CAMPFIRE Districts in Zimbabwe)[12], and timber production (e.g. West Coast beech forests in New Zealand).[13] Thus the evidence is strong that once governments have recognised the nature and value of TFRK and have accepted the need to manage resources through local partnerships, then such arrangements are both feasible and effective.

56. Many studies show that local people are well aware of the nature of many of the resources in their environments, and how to manage them well.[14] Special knowledge and authority over certain resources are often possessed by individuals, by women or men, by clans, or by groups descended from residents of particular villages (e.g. in parts of Switzerland). Harvesting rates may be regulated by access controls of a wholly traditional kind (e.g. molong among the Penan of Borneo), or re-invented but based on older forms (e.g. sasi among the peoples of Maluku in Indonesia), or else are a new response to changing circumstances (e.g. in the Niger Delta of Nigeria, where one community has devised a '3- years-on-9-years-off' logging cycle for certain trees). It is most feasible to maintain such control over land and trees, which are easier to claim and mark than wild animals. Hence traditional controls on hunting often curtail access to hunting grounds, supplemented by rules on sharing the meat of certain animals and taboos that, taken separately, have little effect on harvests.

57. All this suggests that TFRK can provide a strong basis for sustainable forest management for two main reasons. The first is the quality of information and interpretative systems possessed by local people after living in a forest for several to many generations, while the second draws on the strength of their commitment to sympathetic forest management that results from having such knowledge. In other words, they know much and because of this they care greatly.

58. Traditional people do not know everything, however, and nor are they able to regulate every use of every component of a forest. Gaps in knowledge and control mean that they are unable to manage a forest to the limit of its productive capabilities in every dimension. Broad margins for error are built into traditional systems, and depend on social measures to limit the number of users, for example by defending group territories, limiting fertility, and regulating the timing and extent of access to certain areas. These margins buffer the managed forest against the effects of human error and also unexpected events such as those caused by El Ni o influences or climate change.

59. These measures are able to achieve sustainable use provided the underlying conditions remain fairly constant. A management system based on TFRK can however unravel quickly if population density increases, if access controls break down, or if new technologies are introduced that allow goods to be sold on external markets. Conversely, there are ways for a stable, TFRK-based system to be maintained while selectively importing new ideas and investments to increase the range of materials harvested and the revenues obtained. These ways require that the possessors of the TFRK concerned maintain their authority to decide how the forest is used, and are able to decide for themselves which ideas to import and which investments to undertake, and when.

b) Biodiversity prospecting

60. TFRK can be divided between forms that cannot be understood and used beyond their local context and those that can. The latter can then be divided into forms with and without commercial potential (Figure 3). The final category comprises good ideas for managing forests, which everyone may agree to share freely provided the source is acknowledged. Some forms of TFRK, however, can help biodiversity prospectors create new goods and services that might be patented and sold. This concept may be disturbing to people who possess TFRK, who may consider the notion analogous to making an inventory of a World Heritage Cultural Site, with a view to identifying items for sale.

61. In this context, Articles 8(j) and 15 of the Convention on Biological Diversity introduce important guidelines. In particular, Article 8(j) provides that the wider application of the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles should entail the approval and involvement of the holders of such knowledge, innovations and practices, as well as the equitable sharing of the benefits arising from the utilisation. Holders of TFRK are thus entitled to make the sharing of such knowledge contingent upon satisfactory benefit-sharing arrangements. Notwithstanding this, there may be cases where traditional communities. for well-founded cultural reasons, choose not to reveal their knowledge.

62. The value of ethnobiological knowledge in guiding those wishing to identify certain kinds of naturally-occurring chemicals within wild species is now well established.[15] In the case of medicines, traditional preparations are used to treat many ailments, including all kinds of infection, asthma, diabetes and hypertension, and these preparations often have real effects on pathogens and symptoms. This is because over millions of years plants have evolved chemical defences against predation and disease, which therefore affect animal physiological systems and inhibit fungal, bacterial and viral growth or reproduction. TFRK can be employed to guide the practical choice of those species most likely to present the desired properties from among the thousands of species that may be present in a forest. Such information can save much time and money when used as an alternative to the random screening of specimens. These savings can be of great commercial significance and, consequently, raise significant access and equity issues.

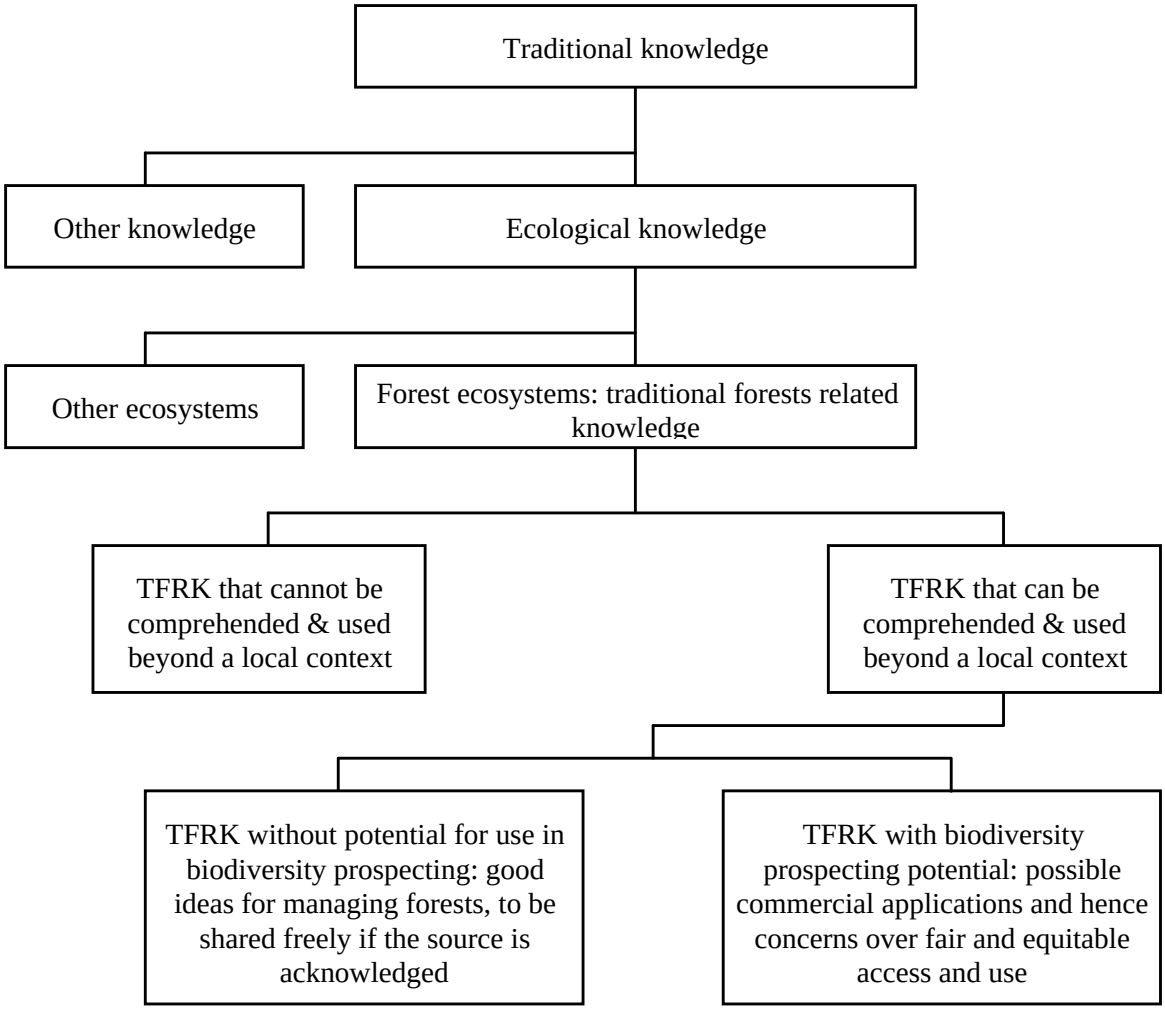

Figure 3: One way to classify traditional knowledge.

63. These issues revolve around prior informed consent, or whether people wish to use their own TFRK for biodiversity prospecting and, if so, how and on what terms. Other issues should not arise until this basic decision has been made after free, full and informed discussion. The reason for this is that the aims involved will affect the details of how data are to be collected, managed and used. For example, procedures will be very different if the aim is to record TFRK for the direct use of local people and the teaching of children, or if the aim is to make money. Although computer databases might have a role in meeting the first aim, viable alternatives include apprenticing young people to experienced shamans and healers and promoting work between them and school-teachers. If income is sought, however, then other needs come into play.

64. The foremost of such needs is for a supportive legal framework to be put in place at the national level, including legislation requiring all biodiversity prospecting to occur through valid and enforceable contracts between the owners of TFRK or, in the case of local species in inhabited forests, their ownership partners (Figure 4). For countries that are Parties to the Convention on Biological

Diversity, such legislation should be consistent with the terms of the Convention. The law should specify the minimum terms of such contracts, for example the form of material and data transfer agreements, the kinds of payments and technology transfers that must be negotiated, the legal nature of the parties, procedures and jurisdiction for enforcing the contracts and for settling disputes locally with the participation of the ownership partners, and arrangements for terminating the contract.

65. International agreements can have an important role in requiring, for example, that the owners of TFRK connected with a patent application certify that they are satisfied with the process by which it was obtained. It would also be helpful if descriptions of inventions submitted in patent applications were to be required to include an account of the location of origin and social context of the material used in developing the new product, including its past use by people. The government (or the TFRK owners themselves) may also wish to cooperate with other countries or groups to enforce these minimum terms. An enterprise that violates the terms of a research agreement in one country, for example, might then find itself barred from other countries under such bilateral or multilateral agreements.

66. A framework law as outlined above would establish minimum terms for TFRK-based biodiversity prospecting, but must be supplemented in any given case by a suitable contract between the owners of TFRK and others wishing to use that knowledge for biodiversity prospecting. Such contracts will be negotiated according to the needs of the parties concerned, and cannot sensibly be prescribed in advance. Contracts should normally be for specific access for limited periods and their terms should include financial advances for initial access to information, royalties on any discovery made using that information, and provision for technology transfer to the TFRK owners to enable them to increase their ability to participate in later research and development.

67. Few countries yet have both a framework law on biodiversity prospecting and local institutions capable of negotiating and enforcing research and development contracts with commercial partners. For example Costa Rica, which has an advanced system for managing biodiversity prospecting, has chosen not to use TFRK as a source of information until the indigenous people who possess it are ready to become involved on their own terms. Other countries have a framework law (e.g. Executive Order 247 of May 1995 of the Philippines), but other aspects of the process are still being debated. Meanwhile, the Costa Rican biodiversity management approach remains an important starting point for any group wishing to devise its own way forward in this area.[16]

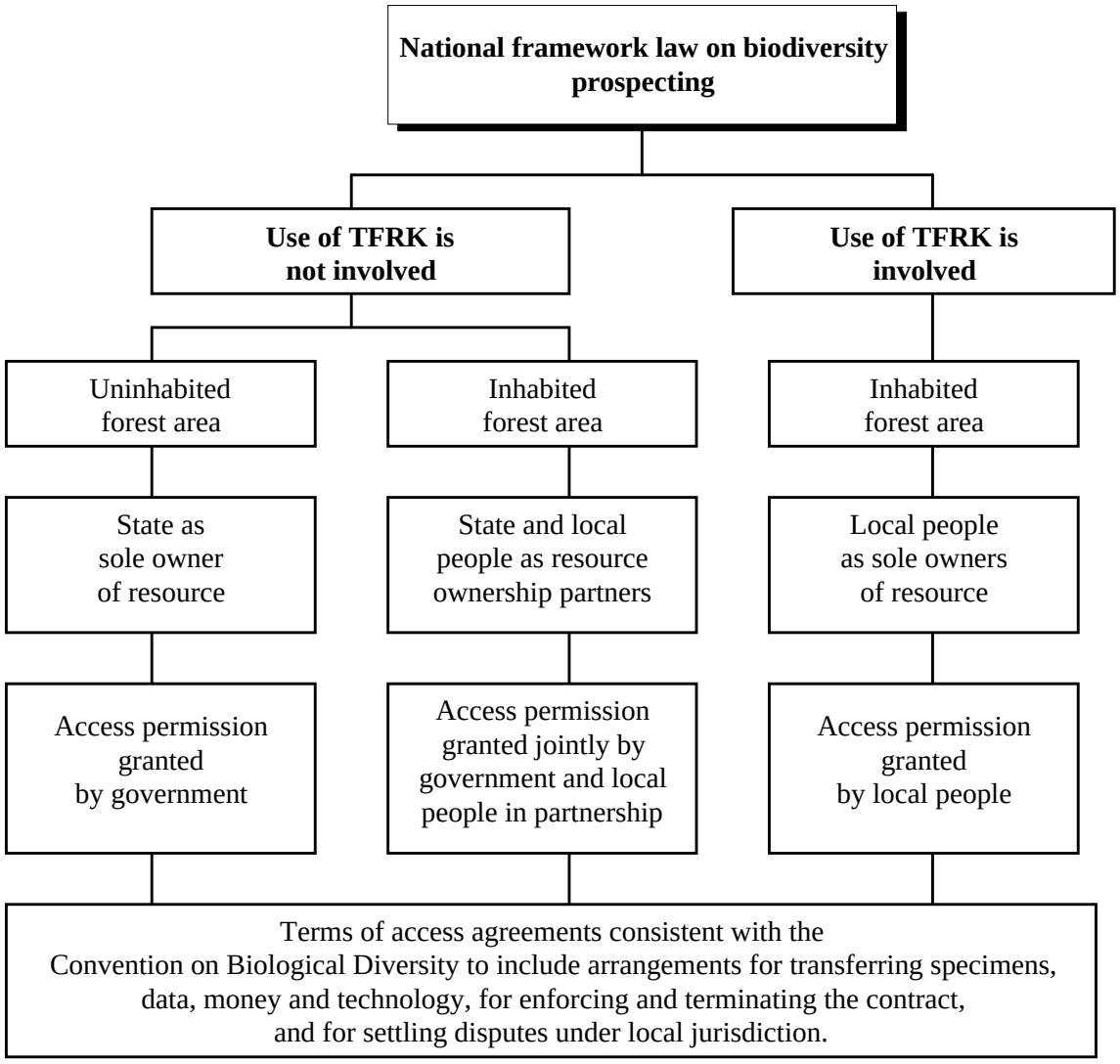

Figure 4: Pathways to biodiversity prospecting.

68. Another set of experience is that of Shaman Pharmaceuticals, a US- based biodiversity prospecting firm that specialises in using TFRK to identify materials for further investigation as potential pharmaceuticals.[17] The company is committed by its access contracts to return a share of profits to the peoples from whom it obtains TFRK, and all the peoples with whom it has ever worked will share equally in those profits regardless of the source of any particular product. The company has established the Healing Forest Conservancy (HFC), to work with informant peoples to identify acceptable forms of revenue sharing and to test them through pilot projects. The kind of return most often requested from HFC is help in clarifying resource tenure, but technology transfers through training programmes are also sought after. Each group also has the opportunity to request payments in cash if they so wish.

c) Sharing good ideas

69. Enough cases are now on record to suggest that anyone who does not take into account TFRK in planning forest management is unlikely to be doing an effective job. In the Caprivi region of Namibia, for example, attempts were made to overturn the traditional practices of early burning in silvipastoral systems and oxen-drawn ploughing in agroforestry ones. As predicted by local people, these resulted in serious fire damage and soil erosion and are now being reversed. Similarly, in Ontario, Canada, logging companies ignored TFRK-based predictions that summer logging would damage fish stocks and that large- scale clear-cutting and poisoning of aspen as 'weed' trees would adversely affect the supply of moose, beaver, blueberries and medicinal plants for local people. Corrections based on TFRK were then introduced at little financial cost to the companies, but at great social and economic advantage to the ownership partners collectively.

70. Meanwhile, at Ekuri in Cross River State of Nigeria, the British Government has been supporting a community forest project that demonstrates how to build management partnerships based on secure resource tenure and TFRK on the one hand, and on appropriate levels of advice and encouragement on the other.[18] Some of the lessons learned were revealed when the Ekuri people were asked to advise another village trying to solve its own problems of forest depletion, and said that the people there should: * be united and prepared to work hard; * believe in themselves and start self-help projects after full discussion of their own problems and opportunities; * ensure prudent and realistic management of all the village's resources; and * work with government departments and other outside groups to obtain help with transport and marketing, training and technical advice, financing, and monitoring and evaluation.

71. The above suggests the existence of a class of TFRK that, whilst of negligible commercial significance, is likely to be of widespread benefit if shared. There is at least a need for TFRK perspectives to be incorporated in standard forest management training, as a way to sensitise forest managers to ways of accessing TFRK, to the benefits of using it, and to the dangers of ignoring it. A pioneer institution is the Faculty of Forestry of the University of British Columbia in Canada, which in 1995-1996 opened a pilot course in 'First Nations' Perspectives on Forest Lands', and held a workshop to identify how to include aboriginal perspectives and management partnerships in the other courses taught by the Faculty. At least three other Canadian universities are following suit (Simon Fraser, Victoria and Toronto), but clearly there is a long way to go even in Canada, and most other countries have yet to begin.

72. Another way to share TFRK is to rely on networks of concerned groups and institutions to collect information in collaboration with indigenous people, and to make this available through newsletters or on the Internet. A list of access points to existing networks is given in Annex 3, and these could constitute a public access, interactive database, for example within the clearing house mechanism for technical and scientific co-operation of the Convention on Biological Diversity.

73. If TFRK is to be stored in a computer system and rendered accessible on the Internet, an agreement with the owners of the knowledge concerned would be appropriate. This is the third kind of access agreement that follows from recognition of collective property rights over TFRK. Since here the aim is to share rather than to sell knowledge, the terms would presumably be limited to confirming the owners' right to exclude certain kinds of information from storage and dissemination, and the due acknowledgement of sources.

74. Not all forms of TFRK can be managed using modern techniques, however. Traditional and cosmopolitan knowledge are both ultimately derived from data, comprising observations about the

world. In the case of TFRK, data often relate to seasonal and other changes in the environment which may, for example, indicate the availability of a resource or the timeliness of a ritual. From the 'western scientific' perspective, data often consist of numeric, categoric and other types of observation that can be held and manipulated in databases. Whereas TFRK data are gathered without the need for sophisticated measuring equipment, computer technology or communications, western scientific data may need some or all of these.

75. The two sources of data demand different approaches to management and communication. Technologies designed to manage western scientific data are largely unsuitable for TFRK. Thus the knowledge of a forest- dwelling community cannot be committed to a computer database without losing many of the understandings implicit in the narrative material. Almost by definition, TFRK applies to the locality in which it is obtained and may be meaningless elsewhere. Nevertheless, there is role for exchange of TFRK between separate forest-dwellers and managers in similar environments, and between generations in communities where normal TFRK exchange processes have broken down. In such cases, the exchange of TFRK should be treated as a two-way process aiming to blend new knowledge with what is already known. Interactive fora such as workshops and meetings are essential, since the facts may not make sense without being adapted to local conditions.

76. Since most TFRK cannot usefully be digitised, the role of computer database technology is likely to be limited mainly to the sharing of anecdotal information through the Internet, and certain specific tasks associated with biodiversity prospecting. In these cases, translation and data security are respectively the main design issues. Digital mapping (using GIS and GPS) combined with social mapping will have an important role in establishing forest ownership, planning and management partnerships, and anecdotal information can be culturally and geographically located in the same system to assist in forest management tasks. Precise design specifications await further study and consultation.

D. OBSTACLES TO FURTHER PROGRESS

77. The chief needs are for the identities of groups which possess TFRK to be recognised in law, and for the TFRK itself to be legally recognised as the common property of the group in each case. Once these measures are accomplished by national governments, it will be possible to access and use TFRK by agreement with its owners. These agreements would be of various kinds, depending on the kind of partnership to be established, with forest management, biodiversity prospecting and information-sharing partnerships being the main options.

78. The main obstacle to achieving such settlements is likely to be a reluctance to recognise the ownership of TFRK because of the need then to negotiate consensual agreements with its owners. International fora such as the Intergovernmental Panel on Forests provide an opportunity for governments that have taken this path to reassure others that TFRK is indeed useful in managing forests sustainably and in locating valuable new products, and that accessing it on fair and equitable terms can only benefit each country in its efforts to achieve sustainable development.

79. Certain common stumbling-blocks have emerged from the experience of countries that have sought to make such arrangements. In the process of deciding which areas of forest are truly uninhabited and which are not, for example, there is the problem that the definition of forest habitation or use may not be shared between the nation and the claimants. The latter may consider that habitation is established because they have used the area for hunting, as a source of emergency food, as a place for initiating youngsters, as part of an extended fallow system, or as a resting place for their

ancestors. Negotiations to settle such misunderstandings are inherently delicate and can be delayed by many factors.

80. The possession of TFRK can mean, for instance, that local people clearly distinguish places with different soil fertility, value as hunting grounds, or spiritual significance despite their superficial similarity. These factors may be completely lost on government negotiators who have only a general understanding of the location concerned. Other problems may arise from differences in perceived transaction costs by the two sides, for example when a government uses expensive senior officials to negotiate with local people who have a different sense of the value of time spent negotiating. The idea of compensation may also be perceived differently by the two sides, since some cultures may see compensation in ritual terms as a fine to correct a spiritual imbalance rather than as a source of money. Evidence of respect paid by a government team to local people might in some other cases mean more to them than would a financial settlement alone.

81. Specific proposals have been made for establishing "an Ombudsman's Office that would not only advise indigenous and local communities on the protection of their resource rights and on benefit sharing, but represent them in their complaints relating to infringements of their resource rights".[19] Another option for facilitating settlements would be to create an arbitration and conciliation mechanism. The creation of such mechanisms would be helpful to groups seeking the fair and equitable settlement of conflicts of interest over forest and other resources.

82. Many forest areas have recently been occupied by settlers from urban or agricultural situations who have been attracted by economic opportunities at the forest frontier or have been driven there by poverty or landlessness. Other new arrivals in a forest may have been displaced by development projects elsewhere. In any such case, the newcomers will have little or no TFRK that is useful in their new location. We have shown that sustainable use of a living resource depends on the number of users being limited by social rules to those who understand the resource well enough to be able to use it properly. Such rules are devised and knowledge accumulated in a particular place by a particular people. Suddenly replacing those people with others who lack appropriate rules and knowledge can only result in resource destruction, and this is indeed a major cause of undesirable forms of deforestation world-wide.[20]

83. This major problem can be avoided if governments were to adopt effective policies that discourage colonisation of forest frontiers or displacement of people from forest areas. Where new settlement has already occurred and cannot be reversed, however, governments could promote the education of settlers in how to live in their new environment without damaging it. This would create an important role for environmental education within communities on the forest frontier, and suggests that surviving traditional people in the area could have a vital role in showing newcomers how to live there sustainably. This has been proposed as a major need in Irian Jaya (Indonesian New Guinea), for example, where aboriginal peoples are now outnumbered by transmigrant settlers from elsewhere in Indonesia.[21]

84. A constraint on the formulation of TFRK access agreements for biodiversity prospecting is the need for legal and other forms of technical advice by governments that are contemplating a framework law, and by peoples who are trying to negotiate an equitable bioprospecting contract with commercial groups. The National Biodiversity Institute of Costa Rica (INBio) has a record of providing such advice on request (e.g. to the Philippines and Indonesia),[22] but neither INBio nor any other institution could be expected to do so on a large scale without additional resources to meet the demands on its staff and computing time. A well-funded international network of expert institutions and individuals would go far to relieve this important constraint on fair and equitable access.

85. Finally, there are several obstacles to sharing information between the owners of different traditional knowledge systems, and between them and cosmopolitan forest managers and others. They include difficulties in translation among the many languages involved, a lack of common standards for storing, accessing and disseminating relevant information, and a lack of technology and training of the right kind to provide all TFRK owners with Internet access.

E. CONCLUSIONS AND RECOMMENDATIONS

86. In the initial discussion at its second session, the Panel reiterated the terms of reference for this programme element; recognised that these included considerations of how traditional knowledge and practices in their broadest sense could be applied to sustainable forest management; and noted that it would need to take into account the outcome of the Conference of the Parties to the Convention on Biological Diversity at its third session in relation to indigenous knowledge. The Panel noted the importance of traditional forest-related knowledge, innovations and practices to the fulfilment of its mandate, and noted the need to address the relationship between traditional forest-related knowledge and biological diversity, and to take account of other relevant intergovernmental processes, in particular the Convention on Biological Diversity, so as to avoid duplication or overlap. It requested that the report contain well-defined proposals for national action, including an exploration of the need for and the feasibility of mechanisms for considering ways and means as regards the effective recognition, protection and equitable sharing of benefits arising from the use of traditional forest-related knowledge related to forest management practices (E/CN.17/IPF/1996/24, paras.83-87).

87. The Panel noted that a series of issues concerning the provision of technical, technological and scientific advice on traditional knowledge, innovations and practices of forest use and conservation merited further development (E/CN.17/IPF/1996/24, para.88), identified matters that should be addressed (para.89) and noted the need for effective protection of indigenous rights and for the equitable sharing of benefits (para.90). These issues have been addressed above in sections B, C and D of this report and the Panel may wish to consider the following specific observations:

(i) Most TFRK will mean little outside the environment where it arises and is likely to be most valuable as a means to achieve on- site sustainable forest management;

(ii) Much of this knowledge cannot, and the rest should not, be taken from its owners without their consent and participation;

(iii) Of those forms of TFRK that do have meaning outside their place and culture of origin and potential usefulness to global society, some have no potential for commercial application, but are nevertheless the intellectual property of their owners;

(iv) Forms of TFRK that have both meaning outside their local context and potential commercial value require the establishment of holistic approaches to intellectual property which allocate to the owners of traditional knowledge, innovations and practices rights and protection comparable to those offered under existing intellectual property regimes. Such holistic regimes should inter alia establish the right to collective ownership of such knowledge, protect the owners' rights and permit the equitable sharing of benefits;

(v) Such intellectual property protection for traditional knowledge would need to include:

(a) The recognition of groups possessing TFRK as legal entities for the purposes of entering into access agreements concerning TFRK;

(b) The acknowledgement of the right of any such group not to reveal such traditional knowledge;

(c) The recognition in law of the TFRK concerned as the common property of the group entering into the access agreement;

(d) The need for all access to TFRK to be through an access agreement with its owners, where these can be identified.

(e) The definition of the terms of access agreements for the three main circumstances in which access to TFRK might be sought: where the aim is to manage a forest by partnership between the people who live there and the government; where the aim is to invent patentable products for commercial use; and where the aim is to share knowledge freely with others.

88. If the most substantial contribution of TFRK is likely to be in defining sustainable forest management techniques at a local level, as is suggested in this report, then the Panel may wish to consider what guidance can be given to governments in order to assist the establishment of the three levels of partnership (ownership, planning and management) referred to above (Figure 2).

89. For indigenous people, their communities and other communities and forest dwellers to participate fully in such partnerships and to offer their TFRK for the benefit of other stakeholders, certain conditions will need to be met. Owners of TFRK will need to feel secure in their land tenure arrangements; reassured that they have been accorded equal status to the other members of the partnerships; convinced of a common purpose compatible with their cultural and ecological values. Furthermore any special needs regarding participation should be catered for. These may include the need for capacity-building (e.g. negotiation skills, understanding of the SFM agenda and outside interest in TFRK, legal support) and mechanisms for compensating the real costs of participation (foregone labour or social investments, as well as out of pocket expenses).

90. As noted by the Panel ((E/CN.17/IPF/1996/24, para.89(a)), indigenous people, forest dwellers and local communities will play a key role in defining participatory approaches to forest and land management, including resource management institutions, land-use systems and conflict resolution. Governments should promote and provide the opportunities for such participation, consistent with Principles 2(d) and 5(a) of the Forest Principles. There is a growing body of literature on participatory methodologies and traditional knowledge [23], based in large part on direct project experience obtained by donor agencies, non- governmental, indigenous and community organisations. The Panel may wish to consider how such knowledge and experience can be brought together with a view to providing guidelines to Governments for participatory partnerships to bring TFRK into the development, implementation and planning of local-level sustainable forest management.

91. A possible first step might be the organisation of a consultation or workshop with experts in TFRK partnerships and participatory planning methodologies. This could be asked to prepare detailed recommendations on the different elements of such guidelines, including legal and administrative frameworks, identification of stakeholders, capacity- building for participants, structure and procedures of participatory bodies, conflict resolution mechanisms, compensatory mechanisms for community or non-professional participants, options for storage and retrieval of TFRK. Experts would be identified from international agencies and donors, Governments, indigenous and local community organisations, researchers, non-governmental organisations, and others with direct experience of participatory projects involving TFRK.

92. As has been noted throughout this report, there are difficulties surrounding the acquisition, storage, retrieval and dissemination of TFRK outside its place of origin. These difficulties reside in the nature of TFRK, overwhelmingly site and culture specific, and in the fact that most TFRK is not amenable to being digitised, stored in databases or accessed through clearing-house mechanisms. It is not clear to what extent TFRK originating in one ecological and cultural context can be made available for sustainable forest management purposes in another, nor what the real level of benefits might be. It seems reasonable to suppose that, if such exchanges are to take place, they will be more meaningful if they occur through face-to-face contact and verbal transmission rather than codified communication channels. The Panel may wish to explore further the feasibility and modalities of such exchanges.

93. Those aspects of TFRK that may assist in the identification of new products with commercial value fall within the purview of the Convention on Biological Diversity, since TFRK is a subset of the 'knowledge, innovations and practices' referred to in Article 8(j) and the genetic resources of forest ecosystems are a subset of the genetic resources referred to in Article 15. The Panel will note that the Conference of the Parties will consider at its third session inter alia:

(i) possible options for developing national legislative, administrative or policy measures, as appropriate to implement Article 15 (Access to Genetic Resources);

(ii) the impact of intellectual property rights systems on the conservation and sustainable use of biological diversity and the equitable sharing of benefits derived from its use in order to gain a better understanding of the implications of Article 16(5) (Access to and Transfer of Technology); and

(iii) the knowledge, innovations and practices of indigenous and local communities: implementation of Article 8(j).

The Panel may therefore wish to consider ways and means to incorporate the results of the consideration of these issues by the Conference of the Parties into its own conclusions, recommendations and proposals for action to the Commission on Sustainable Development, thereby ensuring the consistency with the terms of the Convention on Biological Diversity as stipulated in the terms of reference for this Programme element.

94. The terms of reference for this Programme element identify 'forest dwellers, indigenous people and other local communities'. Principle 5(a) of the Forest Principles states that:

"National forest policies should recognise and duly support the identity, culture and the rights of indigenous people, their communities and other communities and forest dwellers".

The recognition of the identity, culture and rights of 'indigenous people [and] their communities' has been accorded specific priorities and processes within the United Nations system. The Panel will recall that chapter 26 of Agenda 21 contains a programme for recognising and strengthening the role of indigenous people and their communities. Much of the chapter is of direct relevance to this Programme element and the Panel may wish to refer to its recommendations.

95. Recalling the need to take account of other relevant intergovernmental processes, the Panel may also wish to note the ongoing consideration of relevant matters within the Commission on Human Rights, in particular its consideration of:

a) the report of the Special Rapporteur on the protection of the heritage of indigenous people (E/CN.4/Sub.2/1995/26);

b) the United Nations draft declaration on the rights of indigenous peoples (E/CN.4/Sub.2/1994/2/Add.1); and

c) the establishment of a permanent forum for indigenous people (E/CN.4/Sub.2/1995/24).

96. The report on the protection of the heritage of indigenous people proposes 'Principles and Guidelines for the Protection of the Heritage of Indigenous People' (Annex). paragraphs 6 (Principles) and 12, 36, 41, 56 and 58 (Guidelines) are of particular relevance to this Programme element and the Panel may wish to take note of these. The report also recommends 'the convening of a United Nations technical meeting [...] to propose mainly practical modalities for the co-operation of relevant United Nations bodies and specialised agencies in protecting the heritage of indigenous people' (para.33). The Panel may wish to consider how its conclusions, recommendations and proposals for action on TFRK might be brought to the attention of the proposed technical meeting, should this take place.

97. Part VI of the United Nations draft declaration on the rights of indigenous peoples deals with rights to land and to protection of cultural and intellectual property, and addresses many of the concerns identified by the Panel at its second meeting regarding the effective protection of indigenous rights. Article 29 in particular is of direct relevance and the Panel may wish to take note of its terms.

98. Consideration of a permanent forum for indigenous people has arisen from the recognition by Governments, and by indigenous peoples' organisations, that the recognition and protection of the rights of indigenous people would be best served by the establishment of a high- level permanent forum within the United Nations system. It is proposed that such a forum cover the full range of issues concerning indigenous people, including environment and development matters. The Panel may wish to note the consideration of the establishment of this permanent forum and its relevance to this Programme element.

Endnotes

1/ Lutz and Caldecott (in press).

2/ Dasmann (1988).

3/ Gadgil (1995).

4/ Swanson (1995).

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Annex 2

Working definitions

(These are working terms and definitions for the purposes of this report, and should not be taken to imply terms or definitions that have been discussed or agreed in intergovernmental fora)

Biosphere people: those who have extensive access to fossil or mechanically-generated sources of energy and who draw resources from very large areas as participants in an increasingly global economic system.

Community: a group of people who perceive themselves to have a distinctive culture and affinity to place, and who interact routinely in their daily lives.

Cosmopolitan knowledge: knowledge obtained from worldwide information flows as a whole, such as outside informants, broadcasts, publications or from the Internet.

Customary rights: Rights arising from the prolonged repetition of habitual or customary acts that have, by uninterrupted acquiescence, acquired the force of a law within a geographical or sociological unit.

Ecological refugees: ecosystem people who have been deprived of access to their traditional resource base and forced to colonize new localities where their traditional ecological knowledge is largely irrelevant.

Ecosystem people: those who rely on using the energy of their own muscles or those of their livestock to draw resources from a limited area, which they have usually inhabited for several to many generations.

Ethnobiology (ethnobotany, ethnozoology): the study of relationships between people and other life forms.

Fair and equitable: describing an arrangement or transaction that arises by mutual agreement through free negotiation among informed people.

Forest-dwelling people: those who inhabit forested landscapes and obtain essential parts of their means of subsistence by harvesting natural forests.

Indigenous lands and territories: The total environment and all resources that indigenous people have traditionally owned or otherwise occupied or used.

Indigenous people: those who identify themselves as such based on a combination of cultural distinctiveness and prior territorial occupancy relative to a more recently-arrived population with its own distinct and subsequently dominant culture.

Inhabited forest area: an area that is subject to customary rights, or is part of indigenous lands and territories, or is used by forest- dwelling people.

Local people: those who were born or who have settled in an area, and who normally live there.

Shaman: an individual who acts as an intermediary between society and the spirit world and in this capacity leads rituals and heals people (also known as spirit healers, medicine men, seers, mediums, priests, etc.).

Stakeholder: someone with an interest in what happens to particular resources, or someone who may gain or lose something in a dispute over resources.

Tenure: the holding by people of the means to satisfy their needs and to determine their future, often based on socially-defined agreements held by individuals or groups and recognized by law or custom, regarding the rights and duties of ownership, access and/or usage of a particular unit of land or resources.

Traditional knowledge: knowledge obtained by members of a distinct culture from other members of that culture or by means of enquiry peculiar to that culture, and concerning the culture itself or the local environment in which it exists.

Traditional people: those whose social life and access to natural resources is acknowledged by themselves to be mainly governed by customary acts or procedures, rather than by national laws.

Annex 3

Network access points

African Resource Centre for Indigenous Knowledge (ARCIK): fax: +234 22 416129 or +234 1 614397

Brazilian Resource Centre for Indigenous Knowledge (BRARCIK): fax: +55 163 22 4275 email: uejab@brfapesp.bitnet

Burkina Faso Resource Centre for Indigenous Knowledge (BURCIK): fax +226 336517 or 312209

Cameroon Indigenous Knowledge Organization (CIKO): fax +237 322514 or 430813

Centre for Advanced Research of Indigenous Knowledge Systems (CARIKS): fax +91 821 61459

Centre for Indigenous Environment and Development (CIED): email: pdh@u.washington.edu or phardison@igc.apc.org

Centre for Indigenous Knowledge for Agriculture and Rural Development (CIKARD): fax: +1 515 294 6058 email: dmwarren@iastate.edu WWW: http://www.physics.iastate.edu/cikard/cikard.html

Centre for International Research and Advisory Networks (CIRAN): fax: +31 70 426 0329 email: ciran@nufficcs.nl

Centre for Traditional Knowledge, Canadian Museum of Nature: fax: +1 613 952 9693 email: jtinglis@magi.com

Fourth World Documentation Project (FWDP): WWW:http://www.halcyon.com/FWDP/fwdp.html

Ghana Resource Centre for Indigenous Knowledge (GHARCIK): telex: +233 42 2552 UCC GH

Georgia Resource Centre for Indigenous Knowledge (GERCIK): email: dato@botany.kheta.ge

Honey Bee Network: fax: +91 272 427 896 email: anilg@iimahd.ernet.in Indigenous Knowledge Systems List (INDKNOW): email:indknow@u.washington.edu

Indigenous Peoples' Biodiversity Network (IPBN): email:ipbn@web.apc.org

Indonesian Resource Centre for Indigenous Knowledge (INRIK): fax: +62 22 431938 or 250 1977 or 237416

Interinstitutional Consortium for Indigenous Knowledge (ICIK): email:lmsll@psvm.psu.edu

Kenya Resource Centre for Indigenous Knowledge (KENRIK): fax: +254 2 741 424 email: kenrik@tt.gnapc.org or kenrik@tt.sasa.unep.no

Leiden Ethnosystems and Development Programme (LEAD): fax: +31 71 273 619 email: decherin@rulfsw.LeidenUniv.nl

Maasai Resource Centre for Indigenous Knowledge (MARECIK): fax: +255 57 8907

Madagascar Resource Centre for Indigenous Knowledge (MARCIK): fax: +261 2 32123 or 20422

Mexican Research, Teaching and Service Network on Indigenous Knowledge (RIDSCA): fax: +52 22 493995 or 851444

Nigerian Centre for Indigenous Knowledge (NIRCIK): fax: +234 69 50891 or 50563

Philippine Resource Center for Sustainable Development and Indigenous Knowledge (PHIRCSDIK): fax: +63 94 50016

Regional Program for the Promotion of Indigenous Knowledge in Asia (REPPIKA): fax: +632 522 2494 email: iirr@phil.gn.apc.org

Russian Resource Centre for Indigenous Knowledge (RURCIK): email: 1+630.157@compuserve.com

South African Centre for Indigenous Knowledge (SARCIK): fax: +27 21 262466 email: hansn@iaccess.za

South and Meso American Indian Rights Center (SAIIC): fax: +1 415 834 4264 email: saiic@igc.apc.org

Sri Lanka Resource Centre for Indigenous Knowledge (SLARCIK): email:rohana@sjp.ac.lk

Uruguayan Resource Centre for Indigenous Knowledge (URURCIK): fax: +598 2 913780 email: cedesur@lcsnet.chasque.apc.org or pd@agrocs.edu.uy

Venezuelan Resource Secretariat for Indigenous Knowledge (VERSIK): fax: +58 072 33667 email: cquiroz@ing.ula.ve

Working Group on Traditional Resource Rights (WGTRR): fax: +44 1865 284665 email: wgtrr.ocees@mansfield.ox.ac.uk WWW:http://info.ox.ac.uk/~wgtrr/

to subscribe to the Indigenous Knowledge Systems List, send a message to: <listserv@uwavm.u.washington.edu> with a single line of text: <subscribe indknow>