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Item 5 of the provisional agenda*

COMPOSITE REPORT ON THE STATUS AND TRENDS REGARDING THE KNOWLEDGE, INNOVATIONS AND PRACTICES OF INDIGENOUS AND LOCAL COMMUNITIES

The advantages and limitations of registers

Note by the Executive Secretary

1. The Executive Secretary is circulating herewith, for the information of participants in the fourth meeting of the Ad Hoc Open-ended International Working Group on Article 8(j) and Related Provisions, the Phase One – Revised – Composite report on the status and trends concerning the knowledge, innovations and practices of indigenous and local communities relevant to the conservation and sustainable use of biological diversity- assessment of the success of measures and initiatives to support the retention and use of traditional knowledge, including the advantages and limitations of registers as a measure to protect traditional knowledge, innovations and practices (UNEP/CBD/WG8J/4/INF/9).

2. The report is being circulated in the form and language in which it was received by the Secretariat.

* UNEP/CBD/WG8J/4/1.

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The Report on Traditional Knowledge Registers (TKRs) and Related Traditional Knowledge Databases (TKDBs)

Prepared for the Secretariat of the Convention on Biological Diversity

by

Mr. Preston Hardison

Decision VI/10/Annex1/2 of the Convention on Biological Diversity regarding the development of the Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biodiversity, requested the "identification and assessment of measures and initiatives to protect, promote and facilitate the use of traditional knowledge", and "a mix of appropriate initiatives is emerging that can facilitate the revival and maintenance of traditional knowledge and cultural practices relevant to the conservation and sustainable use of biological diversity", including the "establishment of traditional knowledge registers".

This report examines 1.) The terminology surrounding the creation of traditional knowledge databases (TKDBs) and the identification of traditional knowledge registers (TKRs) as one of several kinds of TKDBs; 2.) General benefits and harms that arise from their creation 3.) A functional classification for TKDBs; 4.) Issues raised by representatives of indigenous and local communities; 5.) Examples from national experiences and indigenous and local communities for compiling TKDBs and principles drawn from these.

Leading conclusions are: 1.) TKDBs relevant to the conservation and sustainable use of biological diversity have diverse functions; 2.) The creation of TKDBs present positive and negative incentives to indigenous and local communities, that have demonstrated ambivalence to their creation and maintenance; 3.) The creation of TKRs for the purposes of defensive publication of traditional knowledge as prior art for the preemption or invalidation of patents or the positive registration of traditional knowledge rights have provided some promising and some troubling experiences for indigenous and local communities; 4.) TKBs, non-IPR-related TKRs and other TKDBs are numerous and also present conflicting incentives to and impacts on indigenous and local communities; 5.) The design and implementation of TKDBs reflect numerous legal and policy issues that should be addressed as part of integrated measures for the development and promotion of traditional knowledge databases relevant to the goals of the Convention on Biological Diversity; and 6.) The development of policy and law related to TKDBs should be flexible, adaptable to the particular circumstances of different indigenous and local communities, based on a fundamental respect for the customary laws and cultural integrity of indigenous and local communities, and be based on the principle of free, prior informed consent (FPIC).

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November 5, 2005

I. Introduction

1. Decision VI/10/Annex1/2 of the Convention on Biological Diversity regarding the development of the Composite Report on the Status and Trends Regarding the Knowledge, Innovations and Practices of Indigenous and Local Communities Relevant to the Conservation and Sustainable Use of Biodiversity, requested the "identification and assessment of measures and initiatives to protect, promote and facilitate the use of traditional knowledge", and "a mix of appropriate initiatives is emerging that can facilitate the revival and maintenance of traditional knowledge and cultural practices relevant to the conservation and sustainable use of biological diversity", including the "establishment of traditional knowledge registers".

II. Database Terminology and Scope of the Review

2. There is some potential for confusion in interpreting the scope of the review. The history of discussions of "traditional knowledge registers" within the CBD refers to databases with diverse functions (**NOTE 1**). The World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO GRTKF) generally uses "traditional knowledge registers" to refer to 1. legal registers enabled by statute; and 2. non-statutory databases developed to address a legal issue, predominantly for the a. codification of traditional knowledge to assert positive rights of ownership; b. preemption or revocation of patents based on misappropriated traditional knowledge and genetic resources; and c. misappropriation of traditional cultural expressions.

3. In this paper, the phrase "traditional knowledge databases" (TKBDs) is used to refer to any compilations of traditional knowledge, regardless of their function. Because the mandate for the Article 8(j) review is to assess multiple factors related to the "revival and maintenance of traditional knowledge and cultural practices", this review interprets the mandate to include databases with functions that fall outside of the narrower meaning of legal "registers" addressing intellectual property or access and benefit sharing (ABS) issues.

4. The phrase "traditional knowledge registers" (TKRs) is restricted to traditional knowledge collections that function as legal registers. These databases originate in specific legislation to provide evidence for ,

inter alia, such as land claims, the demonstration of prior art for patent reviews, the protection of traditional knowledge under trade secrets law, or traditional knowledge protection under *sui generis* intellectual property law. These registers raise significant issues of authority and legitimacy regarding the formal registration of traditional knowledge. Issues arise, *inter alia*, concerning the existence of free prior informed consent (FPIC) from indigenous and local communities, how knowledge becomes registered and validated, the ownership the data contained in the databases, and the locus of control over access to register information. Once compiled, databases may be linked to legal issues in administrative law, public law, Constitutional law, and treaty law. For example, databases in some nations compiled at public expense and information submitted to and maintained by the government may be generally considered to be part of the public domain. These issues will be explored more fully below.

5. The phrase "community traditional knowledge databases" (CTKDBs) is used to refer to compilations of traditional knowledge into digital collections of materials such as videos, photographs, audio clips, digital documents and textual descriptions of traditional knowledge, practices, and languages. These are compiled and managed by indigenous and local communities or representative organizations chosen by them. These may have some features that are secondarily deployed in a legal context, particularly in providing documentation of traditional use for land demarcation, treaty negotiations, or traditional resource claims, but their main function is to serve community aspirations.

6. The term "external traditional knowledge databases" (ETKDBs) are databases externally created by citizens, academics, museums, corporations, non-governmental organizations (NGOs), and inter-governmental organizations (IGOs), among others. These databases have a diversity of properties and functions. They may or may not be compiled with the participation and free, prior informed consent of indigenous and local communities. They may be compilations of historical materials, or be continually updated with new information. They may be compiled through formal agreements with indigenous and local communities that detail conditions of access and use, or they may largely consist of information claimed to be in the public domain. Some may have the intent of providing positive legal protection for traditional knowledge, or evidence of prior art for the purposes of patent review or revocation. The two distinguishing features of such TKDBs are that they are not directly compiled and controlled by indigenous and local communities, and they are not directly linked to enabling and supporting legislation at the national and international level.

7. The review will cover all three categories of traditional knowledge databases: traditional knowledge registers (TKRs); community traditional knowledge databases (CTKDBs) and external traditional knowledge databases (ETKDBs).

III. Further Terminological Issues, Cosmovision of Indigenous and Local Communities and TKDBs

8. Indigenous and local communities often rely on oral heritage, and their distinct customs, identities, minority status and self-identification are often used to distinguish them from other citizens in national and international law (**NOTE 2**). In framing this review of cases for the use of traditional knowledge databases to protect, preserve and promote the knowledge of indigenous and local communities relevant for the conservation and sustainable use of biological diversity, it should be borne in mind that these communities may diverge significantly from one another and from the larger society in their concepts related to the compilation and functions of TKDBs.

9. Many discussions concerning TKRs have been related to discussions of access and benefit sharing (ABS) arrangements under Article 15 of the Convention and related work by the World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO GRTKF) (**NOTE 3**), which treat knowledge and resources as secular. Representatives of indigenous and local communities have expressed continuing unease in the use of many common dichotomies and concepts used in these discussions, such as the terms "resources",

"property", "property rights", "intangible property", "public domain" and other terms (**NOTE 4**). As these terms are related to the functions of TKDBs, they are discussed below.

10. Some TKDB issues revolve the recognition and scope give to the customary law of indigenous and local communities (**Note 5**). For many, traditional knowledge is holistic, embedded in a cosmology regulated by customary laws grounded in spiritual beliefs. Mussolini Harvey, an Australian Aboriginal, in responding to a question about the Dreamings, the ancestral beings that brought about creation, says:

> "This is a hard question, because Dreaming is a really big thing for Aboriginal people. In our language, Yanuwa, we call the Dreaming Yijan. The Dreamings made our Law or narnu-Yuwa.This Law is the way we live, or rules. This Law is our ceremonies, our songs, our stories; all of these things came from the Dreaming. One thing that I can tell you though is that our Law is not like European Law which is always changing - new government, new laws; but our Law cannot change, we did not make it. The Law was made by the Dreamings many, many years ago and given to our ancestors and they gave it to us." (**Note 6**)

11. One common distinction in the Convention and in related inter-governmental process is that "tangibles" (such as genetic "resources") can be separated from the "intangible" knowledge about those resources. The "intangible" knowledge is considered to be an informative token that has potential intellectual or economic value to others, but is in itself inert. Indigenous and local communities do not universally view their biological cultural heritage as alienable "resources", but more commonly believe them to be part of a sacred heritage that is regulated by customary law that specifies the limits of its acceptable uses. Biological cultural heritage resources are more closely associated to concepts of guardianship and kinship rather than alienable property and resources. TKDBs are not simple receptacles of inert knowledge, but the information stored in them may be thought to be alive, possessing agency and power, and bound to the "tangible" objects and ideas they represent as an undivided aspect of a living universe. The National Library of New Zealand, for example, notes:

> "The National Library is a guardian of New Zealand's documentary heritage, of taonga or treasures, which have been collected through purchase, donation or deposit. The Library acknowledges that taonga have mauri, a living spirit, that connects a physical object to the kinship group involved in its creation. The mauri is instilled in an item on its creation. It remains an active part of it and links tipuna or ancestors to descent groups. This concept of guardianship is held parallel to, and in addition to, conventional legislation and intellectual property systems. Guardians take on the responsibility to protect and preserve the physical objects as well as their integrity and significance for future, present and past generations." (**Note 7**).

12. The concepts of "property rights" and "public domain", common in discussions of TKRs serving intellectual property (IP) and sui generis legal measures, are also problematic under customary law concepts (**Note 8**). Property and ownership are multidimensional concepts that do not correspond to the dichotomous owned/public domain distinction. Indigenous and local communities differ widely in the details of their property concepts, and there are systems of private, family, clan, hereditary, collective and other forms of exclusive access to knowledge and cultural heritage that may resemble non-traditional concepts of ownership and alienability. But even where knowledge and cultural heritage may be gifted, traded or sold, these transactions are not generally conceived as simple and irrevocable property transactions. The transactions are part of a network of relationships that involves respect for the obligations of the transaction, guardianship over the knowledge or cultural heritage exchanged, reciprocity for the exchange, and appropriate use of the things exchanged (**Note 9**). Continued use and ownership of exchanged knowledge and cultural heritage is dependent on the continual renewal of these relationships and fulfillment of obligations.

Rights to gift, trade or sell are themselves collectively determined, and the collective heritage as a whole is generally considered to be inalienable. The regulation of the use of cultural heritage is believed to originate from sources of traditional cosmovision which are eternally an inalienable component of cultural heritage and this cosmological regulation is reflected in customary law (aboriginal law) and derived indigenous and local community law. Knowledge or cultural heritage that is shared openly may not be intended for exchange, as when a tribal member sings a family song in public without transferring a right to perform the song to others. Knowledge or cultural heritage that is shared openly for exchange and use by others is still often believed to be regulated by cosmological forces and obligations to these forces expressed in customary law, and thus des not conform to non-traditional concepts of the "public domain" that allow for free and unfettered use (**Note 10**).

13. The concept of "protection" has various meanings in discussions related to traditional knowledge and TKDBs, and some of these have conflicting goals and implementation measures. "Protection" has been used, inter alia, to refer to:

a. Protection as a part of the "common heritage of humankind": traditional knowledge forms a part of the global cultural heritage, and should be protected for the common good as part of the global "cultural commons";

b. Protection from extinction: traditional knowledge is in danger of extinction, and so should be recorded and transmitted to others so that the knowledge is not lost;

c. Protection for local cultural memory: traditional knowledge is in danger of extinction, and so should be recorded for the exclusive use of indigenous and local communities and reinforcement of the continued transmission of knowledge between generations;

d. Protection from privatization and unjust enrichment: traditional knowledge is being misappropriated into corporate monopolies through copyrights, trademarks, patents and other intellectual property mechanisms, and TKRs can be used for defensive protection to place traditional knowledge in the public domain to prevent privatization;

e. Protection for access and benefit sharing: TKRs can be used for positive protection to assert rights for benefit sharing through existing intellectual property instruments such as trade secrets law, or through *sui generis* protections;

f. Protection from unauthorized use: indigenous and local communities often claim inalienable rights to their traditional knowledge and cultural patrimony, and these positive rights are affirmed in a number of nations, *inter alia*, through Constitutional declarations, judicial review, treaty provisions and executive orders. In other nations, rights to control access have been granted through similar mechanisms. In both cases indigenous and local communities seek a right to control access to their knowledge and resources through free, prior informed consent (FPIC) and the right to have their customary and derived laws regulating access recognized by foreign legal jurisdictions, both nationally and internationally.

14. Each of these meanings for "protection" has implications for the design and legal interpretation of traditional knowledge databases in a domestic context. TKDBs differ in:

a. The status of what is being protected: regulated under customary law; intellectual property law or the public domain;

b. The duration of protections: protected indefinitely under customary law; protected indefinitely under intellectual property law through mechanisms such as geographic indications or trademarks; temporarily

protected with an expiry on the protection upon lapse of an intellectual property right; protected under a *sui generis* form of protection;

c. Mode of TKDB access: open access; exclusive access; registered access.

d. Mode of use: Requiring FPIC; open to unfettered use in the public domain; open only to non-monopolistic but potentially commercial use; open only to non-commercial uses; reserved for exclusive use by indigenous and local communities, protected under customary law;

e. Mode of benefit sharing: Requiring the equitable sharing of benefits with rights to FPIC; requiring the equitable sharing of benefits but not requiring FPIC, such as through a system of domaine public payant or liability regimes; not requiring FPIC or benefit sharing) (**Note 6**).

15. The foregoing section illustrates that the creation of TKDBs engages many complex issues regarding the definition of terms, conflicts between the concepts of indigenous and local communities and non-traditional concepts applied to traditional knowledge, and a range of sometimes conflicting goals and measures for implementing TKBs, TKRs and TKDBs. The next section examines influences of history, the legal status of traditional knowledge holders, the legal status of traditional knowledge, and the contexts in which traditional knowledge databases are deployed.

IV. Legal Status of Traditional Knowledge Holders, Traditional Knowledge and the Context of TKDBs

16. States differ considerably in their histories and internal classifications of indigenous and local communities, and these differences can affect general approaches to the design of TKDBs. These issues have been a matter of intense discussion within the United Nations system for decades, and are currently unresolved, and have led to the establishment of the United Nations Permanent Forum on Indigenous Issues that recognizes that indigenous peoples present States with a distinct set of issues not adequately addressed under international human rights laws.

17. National systems can roughly be divided into settler states and non-settler states. In settler states, there were clear episodes of colonization in which a resident population could be distinguished from a non-resident population. Many of these states in these regions (e.g. Australia, New Zealand, Latin America, North America) have developed Constitutional, statutory and policy recognition of the distinct status of indigenous peoples. Relations with indigenous communities have been judicially interpreted under the Law of Nations, and a number of states have either signed treaties with aboriginal peoples or otherwise recognized the existence of prior rights inhering from aboriginal governance and self-determination. While these states generally claim "plenary power" over aboriginal peoples, they have recognized degrees of indigenous sovereignty and self-determination, inalienable rights to resources, cultural heritage, lands and traditional knowledge. In these states, rights are defined primarily by treaty status or historical continuity with pre-settlement peoples.

18. The situation is complex in many non-settler states. Indigenous and local communities may share a common history with other ethnic groups that also have long, continual occupancy of the lands. In the history of the negotiations of the CBD, the phrase "indigenous and local communities" was constructed in part to allow for negotiations to move foreword when consensus could not be reached over the use of the singular concept of "indigenous communities" (**Note 8**). Because status is not as clearly defined by aboriginality, the rights of indigenous and local communities are more often defined by self-identification as indigenous; possession of a common history, language, culture, and uses regulated by customary laws that are distinct from national cultures; possession of a common land; exclusion or marginalization from political decision-making; and claims for collective and national rights that are not recognized of their by dominant and governing group(s) of the state. Of these, self-identification is generally considered to be central. (**Note 9**). The longer histories of knowledge exchange and joint resource use, and shared histories

of dominant and marginalized groups have contributed to differences in attitudes towards the sharing of traditional knowledge and its status in the public domain (**Note 10**).

19. The duration and intensity of contact also influences the expressed needs and goals for the development of TKDBs. In remote indigenous and local communities with little contact with national cultures, traditional knowledge may be relatively intact and held mostly within groups. A defensive knowledge publication regime or knowledge banking for the protection of traditional knowledge is not needed by these groups, and knowledge sharing may not be a major goal. In areas where populations are denser, attitudes towards sharing may also be shaped by the interacting cultures. In dense rural settings where indigenous and local communities are in close contact with rural poor that share many values in common, there may be a high degree of reciprocity and open attitudes towards sharing knowledge and innovations for mutual development. In areas where indigenous and local communities are surrounded by dissimilar communities, as is common in some settler societies, lack of shared values, respect and reciprocity has supported arguments for greater control and security over knowledge and cultural heritage (**Note 11**).

20. A further dimension that varies among indigenous and local communities is the geographical scope and geographical location of knowledge and cultural heritage protections measures. TKDBs have been developed to address cultural heritage and associated traditional knowledge that occurs wholly within traditional territories and may be held and controlled wholly within the communities themselves. TKDBs have also been applied in situations where indigenous and local communities have usufruct and other rights on lands shared with other groups, such as hunting, fishing, gathering and agricultural areas on ancestral domains, common lands, public lands, or usual and accustomed stations. Where resources are not exclusive, there are often more demands for information sharing for joint decision making, the fulfillment of administrative law requirements, and other "cross-border" communications that may place conflicting demands on the TKDBs and provoke customary law disputes.

21. Indigenous and local community members have also repeatedly referred to the differences between rights holders and stakeholders, and this debate is relevant to the TKDBs. It has been previously noted (**Note 11**) that states differ in the status they accord to indigenous and local communities and their rights to cultural heritage and traditional knowledge. Part of the debate lays in the interpretation of the subject matter of the concept "indigenous and local communities". In the negotiations of the CBD, many delegates believed "local communities" referred to communities that met the definition of being indigenous under established and evolving United Nations definitions such as ILO 169 or the United Nations Draft Declaration on the Rights of Indigenous Peoples **(Note 12)**.

22. The concept has been expanded and contracted in discussions by delegates to the CBD over the years, and has yet to be explicitly interpreted in a decision by the Parties. The concept has also bee adopted by the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (GRTKF), where in discussions it has applied to indigenous peoples to ethnic groups to non-ethnic sub-populations with highly differentiated local knowledge (e.g. wine growers).

23. The conflation of rights holders with stakeholders is significant in measures for the promotion of TKDBs. In national and international copyright law, for example, there is a principle of balance and proportionality for allocating rights to users and producers of knowledge and is captured in concepts such as "fair use", "fair dealing" and in the idea/expression dichotomy that holds that while particular expressions may be copyrighted, ideas are in the public domain. Such balancing and proportionality would be considered inappropriate when applied to knowledge held in sovereignty (**Note 13**). Copyrights and patents are grants of privileges that can be balanced among stakeholders, while prior rights are recognized, not granted, by states.

24. Many of these issues are actively being addressed by the United Nations Permanent Forum on Indigenous Issues, and the United Nations Commission on Human Rights, Sub-Commission on the Promotion and Protection of Human Rights, Working Group on Indigenous Populations has commissioned a Special Rapporteur to discuss and develop principles on the Protection of the Heritage of Indigenous Peoples (1993, 1995); Indigenous People and their Relationship to Land (2001); and Indigenous Peoples' Permanent Sovereignty over Natural Resources (2003) (**Note 14**). In addition, the Working Group on has developed the Draft Declaration on the Rights of Indigenous Peoples which has been under consideration by the United Nations member governments since 1994. While this Declaration is still under discussion, and obstacles remain for both states and indigenous peoples, there remains a strong level of support by many parties and among indigenous peoples for elements of self-determination and ownership rights over traditional knowledge and cultural heritage (**Note 15**).

25. Other commentators have offered utilitarian accounts arguing that even if entitlements were acknowledged or granted by states for indigenous and local communities over their traditional knowledge and resources, an intellectual property rights approach to access and benefit sharing will provide appropriate incentives for research and development, and whether they are effective instruments for benefit sharing (**Note 16**). Under these accounts, natural rights accounts instruments for managing access and benefit sharing should be guided by concerns for allocative efficiency and their impacts on innovation incentives. Undisclosed traditional medicinal knowledge, for example, might be served by using confidential registers protected under trade secret law, while disclosed knowledge that would be economically indefensible could be compiled into public registers for the purpose of patent protection.

26. In summary, the justification, degree and form of legal recognition given to the traditional knowledge of indigenous and local communities varies among nations and regions. Indigenous and local communities have differing views on the status of their traditional knowledge and cultural heritage between the poles of the public domain and strong ownership and control rights. National and international laws and soft-law regimes recognize differences in the legal basis for rights of indigenous and non-indigenous communities. A number of states recognize prior indigenous rights to ownership and control of traditional knowledge and cultural heritage and the validity of customary law in decisions regarding their use. The developing international regime on indigenous peoples recognizes degrees of prior and inalienable rights and also recognizes the force of customary law. The Conference of the parties of the CBD have recognized the need to incorporate customary law elements into information generated in cultural impact assessments and their role as potential core elements in the development of *sui generis* systems for the protection of traditional knowledge, innovations and practices, and as a possible element in the development of access and benefit sharing regimes (**Note 16**).

27. Traditional knowledge compiled into databases for particular purposes represents the aggregation of a large number of decisions about the legal definition and status of knowledge holders, the status of rights in the knowledge, interpretations of the obligation to obtain and scope of free prior informed consent, and theories of how conflicts of customary law with national and international law should be resolved. The status of traditional knowledge has been a core feature in discussions at the World Trade Organization (WTO) on TRIPS Article 27.3(B) and the relationship between the TRIPS Agreement and the CBD, and the Protection of Traditional Knowledge and Folklore, pursuant to the Doha Ministerial Declaration Articles 12 and 19. Member states of the WTO have differed significantly over the appropriateness of the use of TKRs for use in prior arts determinations, the status of oral knowledge as a form of evidence prior art, and the degree to which traditional knowledge holders are required to adjust their practices to provide evidence under existing WTO rules versus the extent to which changes in the rules of the WTO and *sui generis* measures are required, either as an obligation or an act of comity, to respond to the customs and expectations of indigenous and local communities (**Note 17**). A number of reviewers have noted these features, and have suggested that measures for the development of traditional knowledge databases should be flexible, adaptive, and mindful of indigenous customary law and the right to give free, prior informed

consent for the development of TKDBs incorporating traditional knowledge or related to traditional cultural heritage (**Note 18**).

V. Functions and Examples of Traditional Knowledge Databases

28. Traditional knowledge databases have been compiled in a wide number of contexts for many purposes. Most attention in the CBD has been paid to the role of TKDBs in aiding in access and benefit sharing (ABS) arrangements, although their potential role in implementing the Akwé: Kon Voluntary Guidelines has also been noted (**Note 24**). Most analyses of TKDBs have analyzed national initiatives to create registry systems for defensive protection of traditional knowledge (the publishing of traditional knowledge either already in the public domain or with the aim of placing traditional knowledge in the public domain to prevent or revoke inappropriate patents) or positive protection (create evidence that can be used to provide evidence of ownership). Indigenous and local communities have expressed ambivalence towards these initiatives, as will be discussed below (**Note 25**).

29. TKDBs have been developed by indigenous and local communities themselves, by non-community individuals and organizations with and without the free, prior informed consent of the communities. While the 2010 Targets of the CBD and the cross-cutting programs of work currently focus on traditional knowledge for impact assessment and access and benefit sharing (ABS) arrangements, the COP has referred to other uses of traditional knowledge databases provide benefits for the preservation, protection, promotion and sustainable use of traditional knowledge.

Community Traditional Knowledge Databases (CTKBs)

30. CTKBs are developed by indigenous and local communities for their own internal use: A growing number of indigenous and local communities are developing digital information management systems for their own purposes, that include, inter alia: 1). government: planning; 2). community education; 3). knowledge archiving and caretaking; 4). revitalization of traditional practices; 5). Revitalization of traditional languages. These databases may be simple and open or multileveled with security that manages levels of access to information stored in the databases. The use of traditional languages in a number of these systems provides further security against casual misappropriation, and has helped to revitalize language directly related to the conservation and sustainable use of biodiversity. The TKBs may be text-based, or manage access to digital photos, video segments, transcripts or interviews with elders, community documents, and other digital information. Links to video presentations of knowledge and practices by elders has allowed some of these registers to bridge oral traditions with moderrn technology to help connect youth to traditions in decline. Many communities are linking the information to geographic information systems (GIS) in order to map the distribution of traditional knowledge and cultural heritage within their territories. In some cases these databases are built with little oversight. In other cases, the creation of TKBs is accompanied by the development of formal tribal policy and protocols using customary or derived community law, and capacity-building measures. Examples include the Kaska Traditional Knowledge Network (KTKN) of British Columbia, Canada and the Tulalip Tribes of Washington, United States (**Note 26**).

26. The development of CTKDBs for the internal benefits of indigenous and local communities has contributed to the development of communication and knowledge exchange between indigenous and local communities (the development of community-to-community networks or C2Ns). Many of these networks have developed around new media and technologies such as GIS. While these networks usually do not exchange primary information on traditional knowledge, they have provided significant benefits for the protection, preservation and promotion of traditional knowledge and cultural heritage for communities directly through the sharing of technology to record and manage traditional knowledge, and indirectly by helping networks of indigenous and local communities to better protect and restore their traditional lands and culturally important plants and animals (**Note 27**).

External Traditional Knowledge Databases (ETKDBs)

27. ETKDBs comprise the largest class of traditional knowledge databases. These databases have many functions, and although many are compiled with the aim of aiding access and benefit sharing, they are not bound directly to any enabling legislation that supports their purposes. Many EKTBs were compiled by scientists for academic research in ethnobiology, ethnobotany or ethnozoology initiated before the CBD came into force. Others have been compiled by national or international development agencies involved in public health management, agricultural production and rural technology development.

Development Agenda-based ETKDBs

38. A large number of traditional knowledge databases have been created to serve the needs of sustainable development, poverty alleviation, food security and public health, including the use of traditional knowledge in the global fight against HIV/AIDs. Inter-governmental initiatives include the World Bank Database of Indigenous Knowledge and Practices; the United Nations Educational, Scientific and Cultural Organization (UNESCO) Database Prototype on Traditional Knowledge and Techniques to Combat Desertification; and the World Health Organization Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants (**Note 28**).. UNESCO has published a set of guidelines on best practices for traditional knowledge that is largely based on the development approach (**Note 28**).

39. Private initiatives, many supported by international aid include the Tanzania Indigenous Knowledge Database (TIKD) of the Tanzania Sustainable Development Gateway; the Korean Traditional Knowledge Database (TradiMed); the Encyclopedia of Indian Medicinal Plants and the Caribbean Pharmacopœia, a UNEP-GEF/IDRC funded initiative of the Traditional Knowledge of the Use of Medicinal Plants in Central America and the Caribbean (TRAMIL) (**Note 29**).

40. A number of these databases have no indication of how the databases were compiled, whether or not indigenous and local communities were consulted or had given FPIC for the global dissemination of traditional knowledge or whether this use is derivative from traditional knowledge documented in development projects. The websites do not control access to the databases, or generally discuss the sensitivity of acquiring traditional knowledge, potential conflicts with customary law, benefit sharing or other elements of a *sui generis* knowledge protection regime reflected in COP decision UNEP/CBD/COP/7/21/VII/16/H. The function of both sites, and of an accompanying book derived from the World Bank database, is to "enhance sharing and dissemination of IK information, experiences and practices", without mention of FPIC or the ethics of benefiit sharing.

41. The World Health Organization Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants focus on the technologies for managing medicinal plant and agricultural collections, but these collections have the purpose of deriving plant products and generating knowledge for traditional knowledge databases. A mention is made of the CBD Bonn Guidelines on Access and Benefit Sharing in a single paragraph, but no detailed guidelines are reference to more detailed guidelines is given. UNESCO activities are often guided by principles reflected in the UNESCO Charter and the Universal Declaration on Cultural Diversity (2001) that emphasizes the values of cultural diffusion, innovation and creativity (**Note 28**). The Korean Traditional Knowledge Database (TradiMed) is available through a pay-for-view, and it is unclear how the information on Traditional Korean Medicine and Traditional Chinese Medicine was compiled, whether FPIC was required or obtained for the knowledge, and whether any benefits are shared with source communities for revenue generated from purchased access to the databases.

42. These comments are not intended to disparage these initiatives, which aim to achieve significant public goods to national and international societies, and are major goals, *inter alia*, of the Millennium

Development Goals (MDGs)(2002) and the Doha Declaration (2001). Rather than relying on intellectual property rights, these initiatives focus on participatory community-development initiatives that strengthen economies while building local capacity to manage and sustainably use biodiversity. However, the examples illustrate that a significant segment of databases being developed that are not necessarily harmonized with principles contained in the Bonn Guidelines and related decisions of the Convention on Biological Diversity in relation to the prior informed consent of indigenous and local communities. The relationships between the CBD and the regimes associated with the development agenda related to the compilation and dissemination of traditional knowledge is a policy challenge that has not been well-explored (**Note 30**).

43. Particular concern has been expressed by representatives of indigenous and local communities on potential conflicts of interest in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) (**Note 31**). Article 13(a) on the exchange of information as a mechanism for multilateral benefit sharing and Article 17 on the Global Information System on Plant Genetic Resources for Food and Agriculture promote the open exchange of information as a major form of benefit sharing, in cooperation with the Clearinghouse Mechanism of the CBD. The concern of indigenous and local communities is that these information systems are kept consistent with Article 9 provisions on Farmers' Rights. The interpretation of the meaning of "protection" for traditional knowledge in ITPGRFA 9.2(a) involves the same equivocations in meaning previously discussed (c.f. para. 14). While many indigenous and local communities have expressed support for the seed exchange and access rights in the "common heritage" approach to PGRFAs, they have also expressed concerns over biotechnological privatization of the knowledge and resources provided in an open system, in their ability to control unacceptable uses of them, and in mechanisms to ensure equitable distributions of the benefits arising from the open exchange of information and plant genetic resources.

44. The Honeybee Network and the Peoples' Biodiversity Registers of India are two initiatives compiling TKDBs and incorporate sustainable development agendas within the framework of the CBD (**Note 31**).

45. The Honeybee Network was established in the late 1980s by Anil Gupta and now administered by the Society for Research Initiatives for Sustainable Technologies SRISTI), based around the core principle of the "cross-pollination" or distribution of local grassroots innovations. Among its many partners, the Honeybee Network includes the National Innovation Foundation (NIF) of the Indian Department of Science and Technology, and the Gujarat Grassroots Innovations Augmentation Network (GIAN). Earlier work focused on the documentation and dissemination of grassroots innovations in order to promote community economic development and well-being. Working with the NIF, the Honeybee Network has developed a two-stage prior informed consent (PIC) agreement, the first stage allowing the National Innovation Foundation to share the innovations and combine them with other innovations. If a potential commercial application of the innovations is developed, the NIF then enters into a benefit-sharing agreement with the knowledge holders and is empowered to negotiate on their behalf.

46. General provisions for benefit sharing are provided for in Clause 20 of the Indian National Biological Diversity Act (2002) (**Note 32**). The NIF has established negotiable benefit-sharing guidelines that give innovators 35%, the innovator's community 15%, an innovation trust fund 20%, researchers 15% and administrative overheads 15%. The limitations of the approach are that commercialization of the knowledge held in the ETKDBs has created only modest economic returns for communities, and the property rights in the knowledge in the databases is not currently supported in Indian or international intellectual property law under existing property rights or a sui generis traditional knowledge or traditional knowledge database regime

47. The National Innovation Foundation and the Honeybee Network have developed a National Register of Grassroots Innovations and Traditional Knowledge, and promote the adoption of the model internationally as a model for a database trust (**Note 33**). The main advantages of such a register are: a.

Provision of evidence of prior art for patent reviews; b. Provide evidence for collective rights to innovations should such rights be recognized by national or international law; and 3. Efficient means by which local grassroots innovators and entrepreneurs can connect with investors. The database is available on the Internet accompanied by a prior informed consent form. The form raises one major concern in the compilation of such databases in determining authority to give consent and standards to assess whether or not consent has been obtained (**Note 34**). The form does provide an option to add information into the ETKDB without making it open to sharing. Unlike a medical consent form, the on-line PIC form contains no security to ensure the authority of individuals making submissions on behalf of themselves or communities, no in-depth discussion of the potential benefits and harms that disclosure of traditional knowledge and innovations might entail, and no reference to alternatives other than disclosure.

48. More general concerns have been raised over assertions that individual innovations based on traditional knowledge are the property of the innovators. There is also a reliance on existing distinctions concerning the public domain and intellectual property rights that has been contested by a number of indigenous and local communities (**c.f. para. 12**). The database combine the knowledge of both local communities and indigenous communities, and international adoption of the existing model would be inadequate to the extent national and international law recognizes different bundles of rights associated with the knowledge and resources of these groups. The wide global diversity of indigenous and local communities and differences in historical experiences and cultural beliefs also leaves the acceptability of such a global database in doubt. Many indigenous and local communities have rejected and resisted the development of any TKDBs not directly under their control (**Note 35**).

49. People's Biodiversity Registers (PBRs) were initiated in India in 1995 by several non-governmental organizations and scientists who wanted to "(a) support a decentralised system of management of natural resources, as well as (b) help organise equitable sharing of benefits flowing from commercial utilisation of biodiversity resources and knowledge of their uses" (Gadgil, 2000)(**Note 36**). Because these are not legal registers, for the purposes of this paper they are examples of external traditional knowledge databases). The PBRs have been implemented in hundreds of communities in seven States of India, and have provided a number of positive benefits for participating communities, primarily by revitalizing indigenous and local community awareness and support for the value of their traditional knowledge, contributing to the maintenance of their traditions that that were previously largely ignored by State authorities (Anuradha et al., **Note 36**). There have been some significant differences among regions in the implementation of PBRs from multiple factors. States in India differ in their recognition of resource tenre rights over customary resources, and in the administrative and legal support given to the development of PBRs. A set of general guidelines for the development of PBRs was released in 2005, so that implementation has been influenced by the institutional norms of the implementing organizations that have varied in their approaches to access and benefit sharing and prior informed consent, and by cultural and environmental differences among the user groups adopting PBRs. Many of the main proponents believe that benefit sharing should not come from individual or collective property rights, but that he traditional knowledge should be disseminated and commercialized, with benefits flowing from the National Biodiversity Fund. Other communities compiling ETKDBs make a distinction between widespread knowledge and specialized or secret knowledge, and make distinctions in the knowledge recorded depending on its status (e.g. knowledge of turmeric as an antiseptic, widespread among communities, might be recorded in detail while specialist knowledge of snakebites would only be indicated as being held by a specified individual).

Currently, Access and Benefit sharing arrangements in India are handled by the National Biodiversity Authority under the National Biodiversity Act (2002). There are sixteen representatives on the National Biodiversity Authority, mostly government officials (including the Ministry of Tribal Affairs), eminent persons, scientists, industrialists and holders of knowledge (**Note 37**). The National Biodiversity Authority is charged with regulating the transfer of biological resources and knowledge, and of ensuring that

"the terms and conditions subject to which approval is granted secures equitable sharing of benefits arising out of the use of accessed biological resources, their by-products, innovations and practices associated with their use and applications and knowledge relating thereto in accordance with mutually agreed terms and conditions between the person applying for such approval, local bodies concerned and the benefit claimers." The National Biodiversity Bill also sets up State Biodiversity Boards and Biodiversity Management Committees for state and local biodiversity management decisions and respective State and Local Biodiversity Funds. Chapter II.4 on the Regulation of Access to Biological Diversity, states: "No person shall, without the previous approval of the National Biodiversity Authority, transfer the results of any research relating to any biological resources occurring in, or obtained from, India for monetary consideration or otherwise to any person who is not a citizen of India or citizen of India who is non-resident . . . or a body corporate or organization which Is not registered or incorpo-rated in India or which has any non-Indian participation in its share capital or management." The power of the National Biodiversity Authority to regulate the transfer of biological resource or knowledge is addressed in NBA.V.20(1) and (2):

"(1) No person who has been granted approval under section 19 shall transfer any biological resource or knowledge associated thereto which is the subject matter of the said approval except with the permission of the National Biodiversity Authority.

(2) Any person who intends to transfer any biological resource or knowledge associated thereto referred to in sub-section (1) shall make an application in such form and in such manner as may be prescribed to the National Biodiversity Authority."

Significant questions remain as to who owns the information contained in the databases, and how access to the knowledge contained in them will be controlled. Most of the PBRs are held by academic institutions and NGOs, and not by the communities themselves. As Anuradha et al. note:

"At the same time, there is concern about the fact that biodiversity registers may have the effect of placing knowledge hitherto regarded as “secret” by communities in the public domain, and that once this is done, it would be an invitation for corporate and research interests to freely use the knowledge available in them. Concern has also been expressed regarding the legal vacuum with regard to biodiversity registers. It is feared that documentation without a clear legal resolution of control over the information could have potentially serious consequences." (**Note 36**).

The comments above were addressed to the Draft National Biodiversity Bill and the process of its creation. The decision-making authority over the transfer of traditional knowledge related to biodiversity is now strongly vested in the National Biodiversity Authority, and this law is too new to have transmitted its experiences in national reports. The National Biodiversity Act did not incorporate the language of prior informed consent, and does not refer specifically to indigenous and local communities. The applicability of the provisions related to the transfer of knowledge in the NBA and PBRs, as well as other Indian traditional knowledge databases, has yet to be tested. The act contains a provision NBA.II.5(1) that states "The provisions . . . shall not apply to collaborative research projects involving transfer or exchange of biological resources or information relating thereto between institutions, including Government sponsored institutions of India, and such institutions in other countries, if such collaborative research projects satisfy the conditions specified in sub-section (3)" (on the terms of granting access to genetic and biological resources). These exemptions regulate the activities of primary parties to access agreements, but it is unclear how the "leakage" of knowledge to third parties can be controlled or enforced.

50. Similar efforts are underway in India, notably the Traditional Knowledge Digital Library of Ayurveda (TKDL) and the Health Heritage Test Database (HHTD). The TKDL has been influential as a model for other national and regional initiatives, such as the recent announcement by the South Asian Association

for Regional Cooperation (SAARC) to establish Traditional Knowledge Digital Libraries (TKDLs) in a number of member states (**Note 38**). China has developed the China Traditional Chinese Medicine Patents Database (CTCMPD). The Indian TKDL has the dual purpose of providing development-oriented knowledge dissemination and the protection of traditional knowledge against inappropriate patents, and will be discussed below. General concerns that have been raised by indigenous and local communities and others have been that 1. These efforts have not been sufficiently participatory and reflective of their aims and aspirations regarding their knowledge; 2. The TKDBs are being constructed using the concept of the "public domain" and being constructed without their prior informed consent; 3. Non-IPR mechanisms for returning benefits (such as the development of national biodiversity trust funds) for the return of benefits are being made at the expense of access controls and recognition of customary law related to traditional knowledge; 4. Databases are being compiled in advance of supporting national and international law that is required to adequately protect traditional knowledge; 5. Existing national and international law fails to recognize the diversity of customary laws indigenous and local communities use to regulate the use of knowledge within their societies; 6. External depositaries of traditional knowledge potentially locate important decisions about the disposition of traditional knowledge in databases in control of scientists, NGOs, and governments; and 7. Models based on widespread knowledge such as Ayurvedic medicinal knowledge and Chinese traditional medicines are not appropriate models for the localized traditions and customary law of many indigenous and local communities (**Note 39**).

Patent-related Defensive Traditional Knowledge Databases (Defensive ETKDBs)

51. A common form of external traditional knowledge databases have the goal of providing defensive protection for traditional knowledge by providing evidence of prior art in the public domain. These efforts have been variously sponsored by governments, scientific and research institutions, non-governmental organizations, and individuals. While indigenous and local communities have sometimes participated directly in the creation of development-oriented ETKDBs, they have rarely participated in the development of open access prior arts databases.

52. Indigenous and local communities, the COP, independent statements of Parties to the CBD, and other commentators have raised a number of concerns related to defensive EKTBs that echo the general discussions of the public domain (c.f. para. 12) and the meanings of the concept of "protection" (c.f. paras. 13-14), and are subject to many of the same concerns raised in the discussion of development-oriented ETKDBs (c.f. para. 50) (**Note 41**).

53. Several issues frame the examples below. 1. Many of these initiatives are policy experiments, without a history of practical achievements; 2. The dialogues concerning these initiatives are progressing through various United Nations and national forums, and the initiatives are being revised in response to discussions and diplomatic understandings (e.g. a number of initiatives that two years ago referred to open access traditional knowledge databases are revising their approaches to develop restricted databases or multilevel access systems); 3. The issue of the public domain has been contested by indigenous and local communities, who have argued that in some cases violates customary law; 4. The public domain may be rejected under customary law; may exist under customary law; may be accepted as a matter of practicality by indigenous and local communities in contradiction to their customary law; or may be recognized by national and international legal systems recognize it in contradiction to customary law; each case with alternative associated legal and access and benefit sharing measures; 5. Where the complex issues of the public domain have not been addressed, indigenous and local communities have had some practical protection through the high transaction costs of acquiring and using traditional knowledge that may be significantly lowered with publicly-accessible TKDBs and associated electronic data-mining techniques; 6. Moral benefits from defeating unjust enrichment through 20 year monopolies may not return real benefits to States or indigenous and local communities (e.g. by permanently enhancing non-monopolistic commercial and non-commercial uses of traditional knowledge and associated biological resources in ways that violate custom or compete with traditional resource access);

7. The value of disclosure strategies may depend on *sui generis* changes in national and international intellectual property systems to accept disclosed knowledge as evidence of prior art; and 8. Significant benefits may indirectly accrue through disclosure by enhancing national access and indigenous and local community access to knowledge and resources for livelihoods security, poverty alleviation, and innovation, but this has been encouraged by the COP to be consistent with principles of respect for customary law, prior informed consent and mutually agreed terms (**Note 42**).

53. The Traditional Ecological Knowledge - Prior Arts Database (TEK*PAD) is a distributed search engine that links 4 separate databases owned by independent academic researchers into a single searchable database. This project, developed by the Science and Human Rights Program of the American Association for the Advancement of Science and funded by the Center for the Public Domain, makes over 40,000 detailed records on Native American traditional knowledge on medicinal plants available to the public on the Internet. This project did not consult or obtain the FPIC of any tribe whose knowledge is contained in the database, but did not feel it was required as any knowledge revealed to non-community members is part of the public domain (**Note 43**). The Website is accompanied by an electronic submission form for traditional knowledge accounts in which any submitter can self-authorize a submission and decide the scope of distribution of the record. The sufficiency of the records to meet existing prior art standards and prevent inappropriate patents has not been assessed, nor has any information been collected on its use for patent reviews (**Note 44**). Making traditional knowledge easier to discover may foster the development of non-monopolistic markets based on traditional knowledge and associated biological resources. In some cases this might contribute to turning a patent problem into a harvest competition problem where important cultural plants and animals so that they are not available for subsistence, ceremonies and other traditional uses, directly threatening the maintenance of traditional knowledge.

54. The Traditional Knowledge Digital Library (TKDL), developed as a joint project between the National Institute of Science Communication and Information Resources, the Department of Indian System of Medicine and the Indian Ministry of Family Health and Welfare currently only documents Ayruvedic medicine, widely taught throughout India for over a thousand years (**Note 45**). The project has compiled over 36,000 formulations of traditional Ayruvedic medicine into the International Patent Classification (IPC) format. The structure of this initiative approaches the level of a traditional knowledge register, but has not formally been established in a legal regime with supporting legislation, other than perhaps provisions of the National Biodiversity Act (2002). The primary motive for the creation of the ETKDB was in response to patents granted by the United States Patent and Trade Office (USPTO) for turmeric and neem seeds. Further analysis found that almost half of 762 randomly selected patents issued by the USPTO were based on traditional knowledge (**Note 46**).

55. The original information is entered in Sanskrit that uses natural language processing to automatically convert the Sanskrit into English, German, French, Japanese and Spanish. The translation is tied to a number of large linguistic and taxonomic databases that map the Sanskrit common names for species into the Linnean classification system, and from there into common names applied to the same species in other languages in a process known as data mining. Through this process, the collaborating governmental institutions hope to provide an international database that can provide evidence of prior art for patent examiners. The information is supplied in an extended version of an accepted patent examination format containing sufficient detail to evaluate prior art and to provide some security against minor innovations that could be accepted as novel. This approach has been supported at WIPO, which has established as WIPO Task Force on Classification of Traditional Knowledge to investigate incorporating the extended format into the International Patent Classification System (IPC), and in the WTO by a number of States (**Note 47**). The Department of the Indian System of Medicine and Homeopathy is addressing access issues through the Inter-Ministerial Access Policy Committee (**Note 48**). The Committee is exploring options for access to the TKDL that protects access against misappropriation and misuse. The current model is to distribute copies of the TKDL directly to patent offices under a non-disclosure agreement, and

possibly eventually make the database accessible over the Internet using secure, password protected systems also bound by non-disclosure agreements (**Note 48**).

56. There have been challenges to the TKDL (**Note 49**). In addition to revealing potential commercial applications of traditional knowledge, and the potential for granting patents based on trivial modifications of underlying knowledge and biological resources. The existence of prior art in a database does not guarantee its discovery or inclusion in a patent review. Violations of access and benefit sharing laws and guidelines may be buried in complex, lengthy applications that can make comparisons with existing prior art difficult, time consuming and/or costly. The monitoring of possible violations could also be made more costly and difficult as access restrictions to prior art databases are put into place. Defeating already issued patents can be quite costly, both for national governments and for indigenous and local communities (**Note 50**).

57. The dilemma in any prior art review system is that it potentially reveals information to parties with conflicting interests. Some indigenous and local communities have resisted open registers based on customary law and on strategy to avoid exploitation, as the revealed knowledge can provide clues to follow-on innovations that escape regulation by prior art claims. Others have argued that the benefits from disclosure through the diffusion of technology, knowledge and innovations by blocking patent monopolies outweigh the costs. Some have argued that restricting prior art searches to patent offices, either through the distribution of databases directly to the patent offices or using secure databases available over the Internet can avoid revealing traditional knowledge publicly. The need for information on prior art is not limited to patent review needs, but is also needed by corporations that need to make investment decisions and following procedures of due diligence in order to comply with access and benefit sharing obligations or voluntary guidelines. Corporate searches of prior art databases, however, can put corporations at risk by revealing information about their development interests or projects, and may put national and indigenous and local community interests at risk by revealing traditional knowledge.

58. Another model discussed at the WIPO GTRKF is the hybrid Storybase model introduced by the Tulalip Tribes of Washington (**Note 51**). The Tulalip Tribes have been developing a local traditional knowledge register to manage traditional knowledge for the internal use by the Tribes. They suggest that the structure of their system could be modified to provide a data layer of details of some traditional knowledge, and more schematic indications of sensitive, sacred and secret knowledge, similar to the structure of some People's Biodiversity Registers. Detailed descriptions could be limited to widely revealed knowledge, while sensitive information could be given a narrow indication with details of the holders of the knowledge and protocols for gaining access to more detailed information for prior art determination. The prior art-related portions of the databases would not be disclosed to the public, but made available to patent officers and perhaps corporations. Access would be granted on the basis of non-disclosure agreements that would protect all parties accessing the databases. Rather than depositing the information in a remote database controlled by a government authority, NGO, academic institution, or other entity, the databases developed would remain in control by the communities themselves. Alternatively, traditional knowledge data could be maintained remotely, but by institutions selected by the indigenous and local communities themselves and bound by confidentiality measures. The databases, if following common standards, could be easily linked through the Internet using access security controls. A user of the distributed network would perceive it as a single database for purposes of prior art searches, with searches submitted simultaneously to multiple databases. This system would allow indigenous and local communities to more closely control access to their traditional knowledge, and make and implement decisions over time about the amount and detail of information they wish to make available. This model is only theoretical, and there is no current implementation. There are substantial hurdles to the implementation of such a system. Unlike a database distributed only to patent offices, a distributed system may have difficulties controlling redistribution of information acquired in a distributed network. Maintaining such systems requires coordination and the free distribution of formats, protocols, and software and a coordinating authority to maintain them. The costs and coordination problems may not be

insurmountable, and similar problems would be encountered in maintaining standards compliant with the International Patent Treaty.

59. In summary, the use of open access, public domain prior art databases show some potential for some classes of traditional knowledge, such as the Traditional Knowledge Digital Library documenting Ayruvedic medicine. These ETKDBs present great challenges in that they are often compiled without the prior informed consent of indigenous and local communities, may lack direct mechanisms for access and benefit sharing, and public domain claims may conflict with customary law.

60. For widespread traditional knowledge and associated biological resources, it may be difficult or costly to control access and recover benefits through intellectual property rights or *sui generis* mechanisms. If combined with non-intellectual property benefit sharing mechanisms developed with the prior informed consent of indigenous and local communities these may provide one mechanism for providing benefits in the absence of property rights. Examples of alternative mechanisms include the development of biodiversity trust funds and bioprospecting fees redistributed back to the communities.

61. Alternatively, the usefulness of prior arts databases could be increased through a number of additional measures. ETKDBs could be adapted to more closely fit existing international patent review procedures. The international patent system could be marginally changed to incorporate an extended traditional knowledge classification scheme for patent review. Non-disclosure agreements and similar existing agreements could provide security for multiple parties submitting prior art to and evaluating it in ETKDBs. *Sui generis* measures, such as the development of specific subject matter-based protections for traditional knowledge databases and adapting the international patent system to recognize patent restrictions based on customary law could also add value to prior arts-based TKDBs by allowing prior art to be demonstrated without requiring disclosure into the public domain (**Note 52**). A distributed model, rather than a centralized model, could provide for the scale and low transaction costs required for the functioning of a prior art traditional knowledge database system or registry, while allowing substantial control over the contents and access to indigenous and local communities.

62. Finally, some authors have noted that the use of databases, either for defensive purposes or as legal registers for positive protection, can place undue burdens on indigenous and local communities (**Note 53**). The use of defensive measures should be proportional to the actual threats and damages of exploitation. Because it is very rarely the case that any item of cultural heritage can be turned into patentable property, defensive approaches place burdens on indigenous and local communities to reveal, register, and potentially lose control of their traditional knowledge to protect themselves against a form of exploitation that is very rare. Fore example, in the TKDL Committee study mentioned above (**c.f. para. 56**), the authors found that a sample of 4,896 patent applications or patents granted by the USPTO, contained reference to 90 plants, with 80% of these referring to just 9 plants of Indian origin. If substantiated, these patterns suggest that dependence on wide disclosure of traditional knowledge for patent protection will not necessarily lead to significant protections against inappropriate patents.

Traditional Knowledge Registers (TKRs)

63. Traditional knowledge registers, those established through enabling laws and institutions, have been adopted by a number of countries and regional organizations (**Note 54**). Alexander et al. (2004) make a distinction between two types of TKRs: constitutive and declaratory. Constitutive registers are used to grant certain rights to indigenous and local communities upon completion of formal acts of registration. Declaratory registers recognize prior rights, and registration is not required for the acquisition of a right but is a means to manage information related to the defense of rights to traditional knowledge.

64. The Panamanian Law No. 20 of 26 June 2000 establishes the Special Regime for Intellectual Property over Collective Knowledge of indigenous Peoples for the Protection and Defense of Their Cultural

Identity and Their Traditional Knowledge. The regime establishes TKRs as a means to provide positive protection for traditional knowledge. It is a declaratory register in that rights are not recognized until registered in the national Collective register for Intellectual Property administered by the Dirección Nacional de Derechos de Autor. Diverse indigenous cultural expressions are recognized (including, *inter alia*, traditions, beliefs, cosmovision, artistic expressions, music, dance etc.) if they can be demonstrated to be a part of cultural patrimony. Once traditional cultural expressions are registered and recognized as a Collective Right, they cannot be granted to any other individual or corporation as an exclusive right under existing intellectual property law, and indigenous communities can exclude third parties from commercializing, copying or using the registered Collective Right without prior informed consent. These are not granted to individuals, but must be petitioned for by indigenous national congresses or traditional authorities. Collective rights recognized for one indigenous group cannot be used to exclude other indigenous groups from accessing and using their cultural patrimony. Imitation objects are designated as smuggled objects, These right are granted indefinitely. The registers are publicly accessible. The law also extends similar protections to traditional cultural expressions of indigenous and local communities of other countries, provided there is reciprocity of recognition.

65. The Panamanian law is limited in its relevance to the CBD, in that its main purpose is in protecting traditional cultural expressions rather than traditional knowledge related to the conservation and sustainable use of biodiversity. Indigenous representatives have also expressed concern that the law was not developed with the full participation of indigenous communities; that collective rights are granted rather than recognized; that the decisions over protection are vested in government authorities; and that it recognizes only a portion of their collective rights and does not fully incorporate the standards of prior informed consent over unregistered knowledge (**Note 55)**. Three of the *sui generis* aspects of this law are worth noting: the recognition of collective rights over knowledge; the lack of an expiration of the rights conferred, and the transnational recognition of similar collective rights under reciprocity.

66. Perhaps one of the most developed legal regimes establishing TKRs is the Peruvian Law 27811 of 24 July 2002 establishing the Regime for the Protection of Collective Knowledge of Indigenous People related to Biodiversity (**Note 56**). This TKR is a declaratory register, and collective rights to knowledge and associated genetic resources are considered to be the prior right of indigenous peoples. The law specifically addresses traditional knowledge related to the conservation and sustainable use of biodiversity. Its starting premise is that any use of traditional knowledge not in the public domain requires the prior informed consent of indigenous communities. The law applies to scientific or other publication as a matter of trade secrets protection for undisclosed knowledge. For the public domain, the law recognizes a "*domaine public payant*" for traditional knowledge. A *domaine public payant* regime allows users to commercialize knowledge in the public domain without restriction, but requires a payment to the original holders of the rights to the knowledge (**Note 57**).

67. Three kinds of TKRs are established under the law, The Instituto Nacional de Defensa de la Competencia y la Propriedad Intelectual (INDECOPI) administers a public national register of traditional knowledge in the public domain in order to provide defensive protection of traditional knowledge as prior art for purposes of patent searches. INDECOPI also maintains a confidential register of undisclosed knowledge. The functions of this register are not entirely clarified, as no positive rights are conferred by registration (**Note 56**). The law also permits the establishment of local registers that can be organized and managed by indigenous and local communities. While no rights are attached to these registers, either as legally recognized sources of prior art or as objects of *sui generis* protection, their formal recognition enables INDECOPI to offer technical assistance to indigenous communities in their design, development and implementation (**Note 56**). The law establishes a fund to receive public domain payments, bioprospecting fees, and other payments related to the commercial use of traditional knowledge. This fund is managed by representative selected by indigenous communities. Customary law is recognized as applying to the resolution of disputes among communities over the disposition of shared traditional knowledge and benefit sharing, but is not clearly extended to recognition in national courts.

68. This law is notable for several reasons. It was developed over a six-year period, involving many national and international experts. The law takes an integrated approach to traditional knowledge protection, including intellectual property and non-intellectual property approaches. Like the Indian National Biodiversity Act, it provides measures to control the research and non-commercial use of traditional knowledge without the prior informed consent of indigenous communities. It makes a distinction among different types of traditional knowledge with measures appropriate to each. The *sui generis* legal measures were developed simultaneously with the TKRs, so that deposited knowledge is under a clear legal regime. The law recognizes a role for customary law in dispute resolution.

69. The law had collected some criticisms, although these have been tempered by the recognition that the law is only the first step in a larger process. Critics claim indigenous peoples were consulted fully in the elaboration of the law. While the *domaine public payant* provisions are an improvement over the lack of benefit sharing for traditional knowledge in the public domain, disputes still exist over its extent. The function of the law is clearest in providing a centralized collection point for traditional knowledge to be used as prior art and to coordinate the inclusion of national information on traditional knowledge in international prior art searches. Issues discussed in sections related to external traditional knowledge databases regarding customary law and the difficult trade-offs between disclosure and protection approaches.

World Intellectual Property Organization Committee on Genetic Resources, Folklore and Traditional Knowledge (WIPO GRFTK)

70. The WIPO GRFTK has met eight times since 2001 to consider a range of issues related to traditional knowledge issues that overlap the concerns of the CBD. It has produced over 100 substantive papers exploring the use of existing intellectual property instruments and potential *sui generis* approaches to protect traditional knowledge and support access and benefit sharing arrangements. The Secretarit's reviews have been noted by the COP as being especially useful, particularly the Technical Study on Disclosure Requirements Concerning Genetic Resources and Traditional Knowledge (WIPO/GRTKF/IC/5/10) (**Note 58**).. The WIPO GRTKF has also produced a number of documents related to the use of traditional knowledge registers (**Note 59**).

71. Many of the issues addressed in the WIPO GRTKF have been incorporated into the discussions above. The discussions in WIPO have been diverse, complex, and have not yet led to consensus. The main and invaluable role of the WIPO GRTKF has been to elaborate and clarify a diversity of existing and emerging *sui generis* intellectual property instruments for protecting traditional knowledge and providing for equitable benefit-sharing.

72. Some general conclusions that about the use of traditional knowledge registers and databases are:

1). They are mostly useful in the national context, where countries have sovereign control and work within the context of constructive arrangements with indigenous and local communities within their territories over elements of the overall intellectual property system. Countries have the options of, *inter alia*, recognizing prior rights in knowledge, granting *sui generis* rights over subject matter contained in registers, limiting citizen and corporate rights to compile traditional knowledge databases without the prior informed consent of indigenous and local communities, suppressing requirements for public access to sensitive information regarding prior art, allowing unpublished information contained in registers to count as evidence of prior art, requiring payments for the use of knowledge in the *domaine public payant*, and allowing considerations of customary law to be legally enforceable in national courts;

2). Registers are most useful when they are part of a systematic framework of reforms designed to protect traditional knowledge, so that law and administrative procedures related to storing knowledge in

organized databases and the development of the databases occur simultaneously. Initiative that create traditional knowledge databases without assigning clear rights to them, for example, are characterized by more conflict than systematic efforts. Registers by themselves do not create positive rights that can lead to benefit sharing, and generally require multiple, systematic changes to make this happen;

3). Different goals for "protection" identified by indigenous and local communities are best served by selecting the appropriate intellectual property instruments, and registers should carry the burden of all needs for protection and benefit sharing. For example, the existing intellectual property system has in place an international infrastructure for the reciprocal recognition of geographic indications. Some forms of traditional knowledge could receive strong international protection using geographical indications rather than registers to achieve protection and benefits. Trade secret law, as another example, can make use of WTO TRIPS protection to the extent that it complies with the provisions of TRIPS 39(c) (N**ote 60**). Trade secret law as applied to databases does not work on its own. It is supported by laws that define legal persons, works for hire, contract law applied to employees, the confinement of information within secure buildings, and so on. If indigenous and local communities commonly take "reasonable steps to control the information," such as with highly secret and sacred knowledge, then a trade secret database model might be practical. A trade secret model would not be practical where knowledge is exchanged openly and social controls and shared understandings under customary law are used to manage the flow and use of knowledge. Contract law can work where traditional knowledge and associated resources are not shared widely among indigenous and local communities, or where customary law recognizes alienability. Where communities share knowledge in common and disagree on the use of knowledge, contract approaches can lead to inequitable distributions of benefits.

4). The current bias in the international system is to use TKDBs and TKRs as defensive registers as defensive TKDBs. While geographical indications can use existing widespread reciprocity and mutual legal understandings to achieve protection goals, the international intellectual property framework still has a large reliance on concepts of the public domain, novelty, innovations, and fixed and public forms of prior art in managing patent decision reviews. National level approaches have shown varying willingness to address *sui generis* changes in law to recognize customary law and prior informed consent in the construction of TKDBs. Regional collective action, such as that shown in Andean Community Decision 391 on the Common Regional Access Regime on Genetic Resources and 486 on the Common Intellectual Property Regime have been able to overcome some of these obstacles (**Note 61**).

5). A mix of non-property as well as property rights measures can be used to achieve goals, making use of traditional knowledge distinctions acceptable to indigenous and local communities themselves and disaggregating goals. Benefit sharing for knowledge recognized by indigenous and local communities as existing in the public domain under customary law or as indefensible, could be disclosed in a defensive register with benefit sharing returned through biodiversity trust funds, parafiscal taxes, bioprospecting assessment fees and so on. Highly secret or sacred knowledge could be protected through trade secrets or *sui generis* database rights that could provide subject matter protection to knowledge deposited in specified registers.

6). Some approaches using registers place undue and inequitable burdens on indigenous and local communities to document and register their knowledge to achieve protection in ways that do not apply to other citizens (**Note 62**). Register systems attempting to protect sizeable portions of bodies of traditional knowledge may be unrealistic. Each indigenous and local community may use hundreds to over a thousand species, and collectively hold thousands of items of knowledge, such as medicinal preparations, uses of fibers. Comprehensive documentation places a number of burdens on communities such as financial burdens and time burdens. Demands to record knowledge may disrupt the activities of elders, and conflict with customary law over the storage of knowledge in databases. The use of database technology can create divisions among community members. The non-commercial nature of much of the knowledge makes generating revenue for self-sustaining support of documentation difficult. Governments

may themselves lack the financial resources, the capacity or the will to enforce rights recognized or granted in registers.

7). Disclosure of Origin is a potential alternative to placing documentation burdens on indigenous and local communities (**Note 63**). This places the burden of proof on business interests seeking to commercialize knowledge. Disclosure of origin is also related to TKRs and TKDBs by providing patent examiners with information to narrow prior art searches, to reduce the need to document knowledge by allowing them to contact specific communities. A multi-tiered information system could also reduce the need to build detailed and open registers. Schematic information and knowledge-holder authority contact information could be provided for an initial screen, followed by another contact to negotiate access to more detailed information in a confidential register or direct contact with the knowledge holder.

World Trade Organization (WTO)

73. Paragraph 19 of the Doha Ministerial Declaration, adopted at the Fourth WTO Ministerial Conference on 14 November 2001 instructs "the Council for TRIPS, in pursuing its work programme including under the review of Article 27.3(b), the review of the implementation of the TRIPS Agreement under Article 71.1 and the work foreseen pursuant to paragraph 12 of this Declaration, to examine, *inter alia*, the relationship between the TRIPS Agreement and the Convention on Biological Diversity, the protection of traditional knowledge and folklore, and other relevant new developments raised by Members pursuant to Article 71.1. In undertaking this work, the TRIPS Council shall be guided by the objectives and principles set out in Articles 7 and 8 of the TRIPS Agreement and shall take fully into account the development dimension (**Note 64**).

74. Much of the discussion under this mandate has focused on disclosure of origin. A number of parties have introduced statements on "the inherent limitations of databases" of traditional knowledge that bolsters arguments to support disclosure of origin. Other members have made statements that open databases are a good way to aid in the determination of prior art. The issues have been discussed previously, and no more is done here than to note that there are a number of supplementary statements on the use of registers primarily in the context of disclosure of origin. Further work could be helpful in developing a broader assessment of the Doha Mandate, and the role of intellectual property law as it might apply to traditional knowledge databases and databases in general.

74. The European Directive on Databases (1996) introduced a *sui generis* form of protection for databases that cut across a common fact-expression distinction made in many intellectual property systems. In this schema facts of nature cannot be copyrighted. Complex expressions, however, may be copyrighted. In a number of common law systems, the investment of time, money and labor ("sweat of the brow") is insufficient to turn public domain facts into copyrighted material. The rise of digital technology has made the compilation of factual information very profitable, and compilers for many years have sought for legal protections for their investments. The right to copyright compilations of factual material was recognized in the European Directive on Databases, and this issue has been revisited a number of times at the WTO.

75. A number of commentators have raised questions on these developments related to traditional knowledge databases. Some have suggested that these kinds of rules can be used to extend protections over compilations of traditional knowledge in the public domain. This protection would be based on principles not related to the subject matter of traditional knowledge, and so any support in strengthening protection through this method should be evaluated through the benefits and costs of strengthening protections for other kinds of compilations (e.g. health data and scientific data). Concern has been raised that such protections could leave indigenous and local communities unable to access compilations of their own knowledge. The component databases of the TEK*PAD Project previously discussed are copyrighted by their respective compilers, who have the right to commercialize their compilations. While the compilations are protected, individual records are still regarded as facts of nature and are not

copyrighted. An indigenous and local community gaining this form is protected against wholesale misappropriation, but would not be protected against "fair use" appropriations. Some have suggested that a *sui generis* database right that recognizes ownership based on subject matter would be more secure, in which protection would be extended to the traditional knowledge itself rather than the database compilation (**Note 52**).

The Global Taxonomy Initiative (GTI), the Clearinghouse Mechanism (CHM) and Google™

76. Decision UNEP/CBD/COP/VI.8.5.3 recognizes that a link exists between the activities of the Global Taxonomy Initiative and the implementation of Article 8(j). Traditional knowledge has the potential to contribute to the effective implementation of the GTI by providing traditional knowledge related to names, classification and supporting information relevant to taxonomy. The GTI, through its compilation activities, has the potential to make traditional knowledge available to a wide audience, and concern has been raised that the collection and dissemination of information under the GTI must comply with the provisions of Article 8(j). The suggested output of the decision was a guide to ethical practice and introduction to the value of traditional knowledge to taxonomic assessments. It is noted here that this action has not been completed.

77. While no similar decision has been made in regards to the Clearinghouse Mechanism (CHM) and the expanding network of partnerships in which the CBD is involved, similar questions have been raised in regards to the protection of traditional knowledge that might be contained in databases held by the CHM or its affiliates. There are currently no guidelines to ensure how partners might comply with the provisions of Article 8(j) and related articles of the Convention.

78. As a final issue, it is suggested that the parties of the COP reflect on the phenomenal growth of Google™ in relation to registers and the protection of traditional knowledge. The models presented in this review depend on the control of data held in databases. A consideration of the data mining technologies used in the TKDL, and in partnerships between the Global Biodiversity Information Facility (GBIF) and GoogleEarth™ should give one cause for thought. Data mining tools are able to compare and add sophisticated information to other information the tools encounter, so that more knowledge is available than is contained in the original information. For example, a document may contain the name of the black-tailed prairie dog, Cynomys ludovicianus. Even though the document may not contain the full Linnean taxonomy of the prairie dog, a data mining tool could harvest that information from other documents and store it so that over time it will build up the full taxonomy. Once the taxoonmy, or even multiple taxonomies, have been generated, the smart data mining tool can apply it to any document it encounters. Anytime it encounters the phrase Cynomys ludovicianus, the tool can immediately know and make any user aware of the valid taxonomies associated with the name. The tool can also be configured to learn about other attributes as well, harvesting common names, locations, natural history characteristics, economic uses, and so on.

78. Google is performing these kinds of operations hundreds of millions of times a day. It not only applies artificial intelligence to the web pages it encounters, but also is scanning in books out of copyright and receives and stores millions of keystrokes per day form its user base. GoogleEarth™ allows one to view a two- or three-dimensional map of most locations on Earth. GBIF has linked to this service, so that species locations can be viewed in GoogleEarth™. However, every time this is done, GBIF is transferring bits of its expert knowledge contained in its expert databases to Google™. While this may be a great leap foreword for learning, education, analysis and decision making, it also raises questions regarding how those who would exploit this information might use it. The issue was raised previously about the dilemmas of searching a prior arts database, when the search itself reveals some intelligence about the user's intentions. Google™ captures this kind of intelligence by the terabyte.

79. Traditional knowledge is of special concern here. The ability to link traditional names to the Linnean taxonomy and translate them can threaten an existing barrier to exploitation. The transaction costs that might have limited the ability of others to misappropriate traditional knowledge in the public domain could largely disappear as these technologies grow. The great copying exercise that Google™ is engaged in may make classic novels and great works available to more people, but it may also make anthropological texts more available. The texts will be harvested and analyzed as they come on-line. Exhilarating as the ride will be, it is worth contemplating how some of the oldest cultures on Earth can be protected.

Conclusions and Recommendations

80. Governments have made a number of promising starts to address the concerns of indigenous and local communities for the preservation, protection, and promotion of traditional knowledge related to the conservation and sustainable use of biodiversity. Databases of traditional knowledge are being developed that serve multiple functions including, *inter alia*, community archives; language preservation; sustainable development; poverty alleviation; food security; environmental planning and management; prevention of biopiracy and knowledge misappropriation; and the assertion of positive intellectual property rights over their knowledge.

82. Experiences in the implementation of traditional knowledge databases have differed for many reasons, reflecting, *inter alia*: differences in the aspirations of indigenous peoples regarding their knowledge and the use of technology to store and manage it; the functions of the traditional knowledge databases; regional and country differences in the legal status of indigenous and local communities and their knowledge; and regional and country differences in the intellectual property regimes surrounding the knowledge stored in the databases and applied to the databases themselves.

83. The use of traditional knowledge databases can provide some substantial benefits to indigenous and local communities and the general public good. Community-based databases have allowed them to preserve and revitalize aspects of their cultures. They have aided in building their own environmental management capacity and in the incorporation of traditional knowledge in governmental environmental policy and management. They have aided in the dissemination of traditional knowledge that has led to real benefits in the conservation of agrobiodiversity, agricultural production and food security. They have provided some communities with compensation for their shared knowledge that has led to the distribution of traditional technologies related to the conservation and sustainable use of biodiversity and helped promote innovations based on these traditional technologies. In some cases, they have aided communities in reinforcing and recovering pride and value for their traditional knowledge and recognition for its value by the larger societies in which they are embedded.

84. Experience has demonstrated that reflection and caution needs to be exercised in their implementation. Many of the functions of traditional knowledge databases conflict with one another such that the benefits achieved for one function can produce costs for other goals. Other conflicts involve significant differences in how traditional knowledge is defined and regulated within the communities and externally in national and international jurisdictions. Knowledge for indigenous and local communities has multiple dimensions, such as cosmological, spiritual, ritual, kinship, inherited, and practical. Traditional knowledge is generally regulated under customary law and locally specific rules, taboos, and social and spiritual obligations that may differ greatly from national norms. Customary law regulates what can properly be stored in traditional knowledge databases, how this knowledge should be used, defines the benefits and harms from the distribution of this knowledge outside of its normal context.

85. As a cultural matter, customary law lies at the core of the identity of indigenous and local communities, and cosmological, spiritual and similar beliefs are central for many of their actions to sustainably manage their lands and conserve biodiversity. National and international actions that fail to

acknowledge and respect customary law in decision making contribute to the erosion of the basis from which biodiversity conservation and sustainable use are derived. As a practical matter, storing and revealing traditional knowledge in a database can leave their traditional knowledge open to uncompensated exploitation, inappropriate use, commercialization and privatization. The knowledge revealed for one purpose, for example to supply information on prior art for patent examiners, can lead to problems in other areas, such as harvest competition by outsiders acquiring their traditional knowledge.

86. The study also emphasizes that indigenous and local communities themselves have diverse goals relating to the protection of knowledge under customary law. One common goal is to block unjust enrichment and privatization of their knowledge through patents without their prior informed consent and on mutually acceptable terms. Another goal is to share for the common good, without the need for compensation. Another is to share knowledge, but with compensation for its use, which may be supported by registers but may also be supported by other measures such as biocultural heritage funds. Finally, there is often a desire to protect some knowledge that is secret, sacred, or otherwise highly regulated in the conditions of its use under custom. The objectives of indigenous and local communities can differ by region, by the history of the knowledge under consideration, and by the type of knowledge within communities.

87. This suggests that all of these issues should be taken into consideration in implementing a traditional knowledge database approach. These considerations also suggest that the use of traditional knowledge databases and registers should respond to the needs and aspirations of indigenous and local communities, who should lead in determining the trade-offs among objectives that can occur in implementing them. These objectives can be met through a number of approaches, using intellectual property and non-intellectual property measures.

88. Some recommendations that may be drawn regarding the use of traditional knowledge databases and registers are:

a. Ensure that all measures are derived full and effective participation of indigenous and local communities, with their free prior informed consent, and based on mutually agreeable terms.

b. The rights of indigenous and local communities to their traditional knowledge and the rights to share fully in the benefits from the use of that knowledge should be recognized. National and international law and policy should recognize, to the extent practicable, customary law related to the conservation and sustainable use of biodiversity.

c. Implement traditional knowledge database approaches through a fully participatory approach that allows indigenous and local communities to define their goals for the protection of their knowledge, their recommendations for mechanisms for this protection that may include, *inter alia*, the use of traditional knowledge databases or registers.

d. Perform assessments of the conflicts between the customary laws of indigenous and local communities and national and international norms, policies, laws and legislation to design a mixture of measures to address these conflicts. Alleviating the conflicts can determine the extent to which traditional knowledge databases and registers are used and their scope.

e. The use of formal traditional knowledge registers should be implemented as part of an integrated strategy and not as an end in itself. Registers should be implemented conjointly with multiple policy and legislative measures that will allow indigenous and local communities to protect and control the information deposited in them.

f. Where knowledge is shared or made public, this should be achieved with the prior informed consent of indigenous and local communities and on mutually agreeable terms. Where the public domain and public disclosure laws conflict with customary law or the expressed interests of indigenous and local communities, parties should give full weight and measure to the consideration of customary law. Responses include, *inter alia*, the use of non-register approaches to protection of traditional knowledge such as the adoption of user measures and disclosure of origin, to the development of *sui generis* measures that modify disclosure requirements under patent law or national administrative law.

g. The development of traditional knowledge registers should be guided by principles of equity, proportionality and subsidiarity. Indigenous and local communities should not be required to assume a documentation burden that is not required for other forms of knowledge, and any documentation requirements should be voluntary and sensitive to customary law. The use of registers should be proportional to the problems that the registers are expected to resolve. An example is when massive documentation and defensive disclosure is proposed to solve a biopiracy problem limited to a small number of plants. Subsidiarity is the hierarchy of principles and decision making that ranks higher ends above utilitarian means and places decision making at the lowest appropriate level.

h. The use of open access registers should be avoided, except with the prior informed consent of indigenous and local communities, and measures should be adopted that limit and record the use of traditional knowledge databases and registers that protect both the knowledge holders and the users on mutually agreeable terms.

i. National governments and international bodies should consider *sui generis* measures within intellectual property systems to protect the knowledge of indigenous and local communities. These measures include, *inter alia*, the adoption of disclosure of origin or other measures that can reduce the burden on indigenous and local communities to document their knowledge; changes in evidentiary requirements to include oral and visual materials, and the use of confidential and unpublished materials, as evidence of prior art.

j. Distinguish different kinds of knowledge held by indigenous and local communities, and develop measures appropriate to each. Secret and sacred knowledge should be highly defended forms of traditional knowledge and they should not be included in registers without the prior informed consent of indigenous and local communities.

k. Non-legal and non-intellectual property measures should be integrated into a comprehensive traditional knowledge protection strategy. National governments can use executive orders, policy statements, agency guidelines and similar measures to education decision makers, businesses and the public about the obligation to respect the rights of traditional knowledge holders and respect for using this knowledge even when it considered part of the public domain. National governments and international bodies can adopt fiscal policies that require obtaining prior information consent for scientific research or development projects requirements before using, publishing or compiling traditional knowledge.

l. The use of traditional knowledge registers for defensive disclosure against patents should be used without the prior informed consent of indigenous and local communities. Disclosure can violate customary law and put benefit sharing at risk. Disclosure may be acceptable to indigenous and local communities in some cases, particularly if alternative benefit sharing arrangements exist, such and the collection of funds into trusts through the use of bioprospecting fees, commodity taxes, development deposits, and the *domaine publique payant*. The use of traditional knowledge trusts or biocultural heritage trusts should be explored, and the use of registers as part of a trust approach should also be explored, with the participation of indigenous and local communities. Use of public domain approaches should not be initiated without the free prior informed consent of indigenous and local communities.

m. Support should be made and expanded for the development of traditional knowledge databases by indigenous and local communities for their internal capacity-building.

n. The Clearinghouse mechanism, in its role as a an indigenous and local community focal point, and with the participation of representatives of indigenous and local communities, should review its operations and the operation of collaborating networks to ensure that knowledge made available through any databases conform to Article 8(j) and the decisions of the Conference of the Parties. The CHM should further be invited to develop with the participation of representatives of indigenous and local communities guidelines and protocols for the use of traditional knowledge in biodiversity information networks, and this should be reflected in the Strategic Plan of the CHM.

o. Legal measures should focus on the protection of traditional knowledge rather than the protection of register technologies. Database protection approaches, for example, do not necessarily protect the items of knowledge themselves, and rapid advances in digital technology make such protection vulnerable.

p. National governments should work to develop comity and cross-juridictional recognition of national measures that recognize rights to traditional knowledge, the legitimacy of customary law, and limitations for the use and transmission of traditional knowledge.

q. national governments should repatriate the traditional knowledge of indigenous and local communities stored in national databases, and encourage the repatriation of traditional knowledge stored in private and corporate databases.

r. The Parties should note the useful work performed by WIPO of the roles of disclosure of origin, defensive registers, positive protection, customary law, the public domain, and *sui generis* legal regimes in the implementation of traditional knowledge registers, and encourage the GRFTK to make further and more detailed analysis. The WTO should look at the same issues in relation to TRIPS Article 27(b) on patentability or non-patentability of plant and animal inventions, and the protection of plant varieties, and Article 39 on the protection of trade secrets. WTO should also fully examine the relation of registers in the implementation of the Doha Ministerial Declaration that linked these issues to the development agenda. Further work should also be undertaken by UNESCO, UNCTAD and the FAO should also be encouraged to undertake similar work to develop more unified measures for the implementation of traditional knowledge registers.

Notes

1. For example: UNEP/CBD/WG8J/2/3. Review of Progress in the Implementation of the Priority Tasks of the Programme of Work on Article 8(J) and Related Provisions, UNEP/CBD/WG8J/2/3, para. 15 refers to registers for sui generis protection in India, Namibia and Peru, and Inuit and Dene community registers in Canada; UNEP/CBD/WG8J/2/4. Participatory Mechanisms for Indigenous and Local Communities refers to traditional knowledge registers as a capacity-building measure for the participation of indigenous and local communities in decisions regarding the use of traditional knowledge. The World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO GRTKF) generally uses "traditional knowledge registers" to refer to legally constituted registers. Some agreed upon classification and terminology to refer to different kinds of databases containing traditional knowledge would be useful to separate databases differing in legal status and function.

2. Aikio, Pekka; Scheinin, Martin (eds.)(2000). Operationalizing the Right of Indigenous Peoples to Self-Determination. Institute for Human Rights, Åbo Akademi University, Turku, Finland; de Deckker, Paul; Faberon, Jean-Yves (2001). Custom and the Law. Asia Pacific Press, Canberra, ACT, Australia;

3. World Intellectual Property Organization Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (WIPO GRTKF) (www.wipo.int/meetings/en/topic.jsp?group_id=110)

4. Crucible Group II (2000). Seedling Solutions: Policy Options for Genetic Resources. International Plant Genetic Resources Institute (IPGRI) / International Development Research Centre (IDRC) / Dag Hammarskold Foundation, Ottawa, Ontario, Canada.

5. UNEP/CBD/COP/VI/10, chapeau, " Also recognizing that indigenous and local communities have their own systems for the protection and transmission of traditional knowledge as part of their customary law "; UNEP/CBD/COP/VI/24/App. II/C.3.b, invited WIPO, other international organizations and the Ad Hoc Open-ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention to analyze the "role of customary laws and practices in relation to the protection of genetic resources and traditional knowledge, innovations and practices, and their relationship with intellectual property rights"; and UNEP/CBD/COP/VII/19/Annex d/xvi that the Ad Hoc Open‑ended Working Group on Access and Benefit-sharing consider as an element for inclusion in an international regime " Customary law and traditional cultural practices of indigenous and local communities."

6. Testimony of Mussolini Harvey in Bradley, John (1988). Yanyuwa Country: The Yanyuwa People of Borroloola Tell the History of Their Land. Richmond, Greenhouse, Victoria, Australia (n.s.: cited in Rose, Deborah Bird (2000). The power of place. In: Sylvia Kleinert and Margo Neale (eds.): The Oxford Companion to Aboriginal Art and Culture. Oxford University Press, Sydney. Pp. 40-41. Many further expressions of similar cosmological and customary law views may be found in Posey, Darrell Addison (ed.)(1999). Cultural and Spiritual Values of Biodiversity: A Complementary Contribution to the Global Biodiversity Assessment. United Nations Environment Programme (UNEP). Intermediate Technology Publications (ITP), London, United Kingdom. http://www.unep.org/Biodiversity/.

7. The National Library of New Zealand Access Policy, http://www.natlib.govt.nz/en/about/1keypolaccess.html

8. Tauli-Corpuz, Victoria (2004). Biodiversity, Traditional Knowledge and Rights of Indigenous Peoples. Tebtebba Foundation/ Third World Network, Penang, Malaysia. (twnside.org.sg/title/bioipr.htm); Statement by the Tulalip Tribes of Washington
on Folklore, Indigenous Knowledge, and the Public Domain, July 09, 2003, at the 5th Session of the Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore, Geneva, July 5-17, 2003. (www.wipo.int/tk/en/igc/ngo/tulaliptribes.pdf).

9. Solomon, Maui (2004). Strengthening traditional knowledge systems and customary laws. In: Twarog, Sophia; Kapoor, Promila (eds.): Protecting and Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions. United Nations Conference on Trade and Development (UNCTAD), Geneva, Switzerland. (www.unctad.org/en/docs/ditcted10%5Fen.pdf.)

10. "A song, for example, is not a "commodity", a "good," or a form of "property," but one of the manifestations of an ancient and continuing relationship between the people and their territory. Because it is an expression of a continuing relationship between the particular people and their territory, moreover, it is inconceivable that a song, or any other element of the people's collective identity, could be alienated permanently or completely"

". . . In whatever way consent is given, it is temporary and revocable: Heritage can never be alienated, surrendered or sold, except for conditional use. Sharing therefore creates a relationship between the givers and receivers of knowledge. The givers retain the authority to ensure that knowledge is used properly and the receivers continue to recognize and repay the gift."

". . . In summary, then, each indigenous community must retain permanent control over all elements of its own heritage. It may share the right to enjoy and use certain elements of its heritage, under its own laws and procedures, but always reserves a perpetual right to determine how shared knowledge is used. This continuing, collective right to manage heritage is critical to the identity, survival and development of each indigenous society."

Daes, Erica-Irene (1993). Study on the Protection of the Cultural and Intellectual Property of Indigenous Peoples, E/CN.4/Sub.2/1993/28, 28 July, 1993, see paras. 22-30)

11. Calabresi, Guido; Melamed, A. Douglas (1972). Property rules, liability rules, and inalienability: One view of the Cathedral. 85 Harvard Law Review 1089; Rose, Carol M. (1997). The shadow of The Cathedral. 106 Yale Law Journal 2175; Monagle, Catherine; Gonzales, Aimee T. (2001). Biodiversity and Intellectual Property Rights: Reviewing Intellectual Property Rights in Light of the Objectives of the Convention on Biological Diversity. CIEL/WWF Joint Discussion Paper. Center for International Environmental Law (CIEL) / World Wide Fund for Nature International (WWF), Geneva, Switzerland / Gland, Switzerland. (www.ciel.org/Publications/pubmain.html); Gervais, Daniel J. (2002). The internationalization of intellectual property: New challenges from the very old and the very new. 12 Fordham Intellectual Property, Media and Entertainment Law Journal 929; Gervais, Daniel J. (2002). Traditional Knowledge: A challenge to the international intellectual property system. In: Hansen, Hugh C. (ed.): International Intellectual Property Law & Policy 7. Juris Publishing, Inc., Huntington, New York, USA; de Carvalho, Nuno Pires (2003). From the Shaman's Hut to the Patent Office: In Search of Effective Protection for Traditional Knowledge. Paper Presented at the Conference "Biodiversity and Biotechnology and the Protection of Traditional Knowledge", Washington University School of Law Center for Interdisciplinary Studies, April 4-6, 2003 (law.wustl.edu/centeris/Confpapers/); Dutfield, Graham (2003). Protecting Traditional Knowledge and Folklore: A Review of Progress in Diplomacy and Policy Formulation. Issue Paper 1. UNCTAD/ICTSD Capacity Building Project on Intellectual Property Rights and Sustainable Development. International Centre for Trade and Sustainable Development (ICTSD), Geneva, Switzerland. (www.ictsd.org/pubs/ictsd_series/iprs/CS_dutfield.pdf); Dutfield, Graham (2004). Intellectual Property, Biogenetic Resources and Traditional Knowledge: A Guide to the Issues. Earthscan Publications Ltd., London, United Kingdom.

12. This classification is neutral, and only meant to illustrate some general features of approaches to defining the status of indigenous and local communities and traditional knowledge. See: McHugh, Paul G. with McHugh Ngai Tahu, Ashley (2005). Aboriginal Societies and the Common Law: A History of Sovereignty, Status, and Self-determination. Oxford University Press, Oxford, United Kingdom; Kouevi, Ayitégan G. (2000). The right to self-determination of indigenous peoples: Natural or granted? An African perspective. In: Pekka Aikio and Martin Scheinin (eds.): Operationalizing the Right of Indigenous Peoples to Self-Determination. Institute for Human Rights, Åbo Akademi University, Turku, Finland. Pp. 143-153.

13. McConnell, Fiona (1996). The Biodiversity Convention: A Negotiating History. Kluwer Law International, The Hague, The Netherlands

14. "The current definitions of indigenous peoples most accepted in the international framework include parts or all of the following elements: self-identification as indigenous; descendence from the occupants of a territory prior to an act of conquest; possessing a common history, language, culture, and uses regulated by customary laws that are distinct from national cultures; possession of a common land; exclusion or marginalization from political decision-making; and claims for collective and national rights that are not recognized of their by the dominating and governing group(s) of the state. Of these, self-identification is considered to be central." Mauro, Francesco; Hardison, Preston D. (2000). Traditional

knowledge of indigenous and local communities: International debate and policy initiatives. 10 Ecological Applications 1263.

15. Alexander, Merle et al. (2004). Op. cit.

16. C.f. paras. 13-14

17. C.f. paras. 13-14. While obligations related to national recognition of prior rights to resources within indigenous territories or ancestral lands has undergone extensive judicial review in a number of countries, this has generally not been the case for associated traditional knowledge. UNEP/CBD/COP/VII.16.H on Article 8(j) and Related Provisions on the Development of elements of sui generis systems for the protection of traditional knowledge, innovations and practices invites parties to consider "local, national, subregional, regional and international levels sui generis systems and other new innovative mechanisms that ensure the protection of traditional knowledge, innovations and practices taking into consideration customary law and traditional practices" , and that "extra-territorial protections" are one possible element for a *sui generis* regime (CBD/COP/VII.16.Annex.12). A similar recognition is contained in UNEP/CBD/COP/VII.12. Akwé: Kon Voluntary Guidelines.D stating "Ownership, protection and control of traditional knowledge, innovations and practices and technologies used in cultural, environmental and social impact assessment processes" in situations where traditional knowledge is commonly transmitted to scientists and government agencies. This suggests the intent of the Parties to address the force of customary law in developing legal measures within intellectual property- and non-intellectual property approaches to the protection of traditional knowledge in TKRs and TKDBs as a matter of comity ("comity" is defined in Black's Law Dictionary as "Courtesy; complaisance; respect; a willingness to grant a privilege, not as a matter of right, but out of deference and good will. Recognition that one sovereignty allows within its territory to the legislative, executive or judicial act of another sovereignty, having due regard to rights of its own citizens")(Black's Law Dictionary, Seventh Edition (1990). West Publishing Company, St. Paul, Minnesota).

18. "It is for this reason that indigenous peoples have generally called for the protection of knowledge that the Western system has considered to be in the "public domain," as it is their position that this knowledge has been, is, and will be regulated by customary law. Its existence in the "public domain" has not been caused by their failing to take the steps necessary to protect the knowledge in the Western IP system, but from a failure from governments and citizens to recognize and respect the customary law regulating its use." (Statement by the Tulalip Tribes of Washington on Folklore, Indigenous Knowledge, and the Public Domain, July 09, 2003)(www.wipo.org/tk/en/igc/ngo/tulaliptribes.pdf).

19. Daes, Erica-Irene A. (1993). Discrimination against Indigenous Peoples: Study on the Protection of the Cultural and Intellectual Property of Indigenous Peoples, E/CN.4/sub.2/1993/28; Daes, Erica-Irene A. (1995). Discrimination against Indigenous Peoples: Protection of the Heritage of Indigenous Peoples, E/CN.4/sub.2/1995/26; Daes, Erica-Irene A. (2003). Indigenous Peoples' Permanent Sovereignty over Natural Resources, Preliminary report of the Special Rapporteur, Erica-Irene A. Daes, submitted in accordance with Sub-Commission resolution 2002/15 to the Sub-Commission on the Promotion and Protection of Human Rights, E/CN.4/Sub.2/2003/.

20. Two articles of the Draft Declaration on the Rights of Indigenous Peoples relevant to the creation of traditional knowledge databases are:

Article 12

Indigenous peoples have the right to practise and revitalize their cultural traditions and customs. This includes the right to maintain, protect and develop the past, present and future manifestations of their cultures, such as archaeological and historical sites, artifacts, designs, ceremonies, technologies and visual

and performing arts and literature, as well as the right to the restitution of cultural, intellectual, religious and spiritual property taken without their free and informed consent or in violation of their laws, traditions and customs.

Article 29

Indigenous peoples are entitled to the recognition of the full ownership, control and protection of their cultural and intellectual property.

They have the right to special measures to control, develop and protect their sciences, technologies and cultural manifestations, including human and other genetic resources, seeds, medicines, knowledge of the properties of fauna and flora, oral traditions, literatures, designs and visual and performing arts.

Alternative texts under discussion as of March, 2005 are available at:

Chavez, Luis-Enrique (2005). Report of the Working Group established in accordance with Commission on Human Rights resolution 1995/32 of 3 March 1995 on its tenth session, Addendum, E/CN.4/2005/89/Add.2, (daccessdds.un.org/doc/UNDOC/GEN/G05/133/60/PDF/G0513360.pdf?OpenElement)

21. Gehl Sampath (2005). Regulating Bioprospecting: Institutions for Drug Research, Access and Benefit Sharing. United Nations University Press, Tokyo, Japan.

22. Akwé: Kon Voluntary Guidelines for the Conduct of Cultural, Environmental and Social Impact Assessment regarding Developments Proposed to Take Place on, or which are Likely to Impact on, Sacred Sites and on Lands and Waters Traditionally Occupied or Used by Indigenous and Local Communities, UNEP/CBD/COP/7/21/VII/16/F; Development of elements of sui generis systems for the protection of traditional knowledge, innovations and practices, UNEP/CBD/COP/7/21/VII/16/H

23. See comments by the African Group, Bolivia, Brazil, Colombia, Cuba, Dominican Republic, Ecuador, India, Pakistan, Peru, Switzerland, Thailand, United States, and Venezuela, (www.wto.org/english/tratop_e/trips_e/art27_3b_e.htm)

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