



Legal Protection of Traditional Knowledge for Environmental Sustainability– A Study in India vis-à-vis International Context

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Traditional knowledge (TK) is a key component of a nation's knowledge bank reflecting on the traditional culture, norms and customs. The protection of traditional knowledge is an important component of conservation and preservation directly contributing to the sustainable development of the environment. The protection of traditional knowledge world over is indicative of the rich civilization and heritage and is directly proportional to the national biodiversity index. The robust intellectual property regime, the laws and the regulations therein at the various national and international platforms are deliberating on a system for the protection of the traditional knowledge developed and practiced for environmental sustainability by the vibrant tribal and indigenous communities.

In this research paper, the focus is on the legal regime under the intellectual property domain to identify the aspects with commonality for administering the traditional knowledge of the world's indigenous peoples and tribals, CBD (Conservation of Biological Diversity)ⁱ, the aspects of ABS (Access Benefit Sharing)ⁱⁱ and thereby draft a comprehensive legislation for the protection in India or incorporate the same to the Biodiversity Act 2002. The paper is an attempt to provide suggestive amendments or rather inclusions to the WIPOs (World Intellectual Property Organization) functionality with respect to the commercialization of the traditional knowledge pertaining to environmental sustainability for the benefit of the indigenous originators. The paper identifies the need to draft a framework for the insertion of a new Article under the Constitution of India for the

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protection of traditional knowledge of the indigenous peoples as a Fundamental Right drawing a corollary with the protection of educational and cultural rights of the minorities as prescribed under Articles 29 and 30 of the Constitution of India, in view of the gross misuse and misappropriation of TKs locally, nationally and Internationally.

Keywords: WIPO; CBD; Biodiversity Act; protection of traditional Knowledge; knowledge bank; the sustainable development; access Benefit sharing; tribal and indigenous people.

1. INTRODUCTION

Traditional Knowledge also known as the Indigenous Knowledge (IK) is the regional or local know-how including the folklore of a particular region, community or sect and when this knowledge reflects on the conservation, protection and preservation of the environment at large it is called traditional environmental knowledge. The modern day ecologists understand the sustainable development as a standalone phenomenon to be addressed by the world nations in a modern and technology driven perspective [1-3]. However, the paradigm shift in looking back at the practices and regulations that have been in vogue in the past will provide an insight into the world of sustainability, comprehensive development and the tradition that is fortunately being followed to this day in many parts of the world [4,5].

The global perspective on the protection, conservation and regulation of the environmental components in reality is reflected in the traditional culture and practices of many third world nations and it would be in the best interest of all to protect these awarding due recognition to the original philosophers, thinkers and communities, indigenous or tribal under the traditional knowledge domain of the intellectual property sector [6-8].

The World Environment Day celebrated worldwide on the 5th of June as decided by the UNGAⁱⁱⁱ, the spurt in the non-governmental organizations and agencies working for the cause of environmental protection as mushrooms in wilderness creating an impact of the developing and yet to be developed nations that jump on to the bandwagon so as not to be left behind reflects on the existence of environmental consciousness, awareness of the repercussions of damaging, deteriorating and destroying the natural resources and an innate drive to ensure the regulation, control and implementation of the legislations towards the safeguard of the biome [9-11]. Various international conventions and

conferences led by the United Nations Organization throw ample light on the tenets of the Kyoto Protocol, The Stockholm Declaration, The Brundtland Report on sustainable development, the Nagoya Protocol, the Cartagena Protocol, The Basel Convention and the United National Framework on Climate Change and the postulates that drive environmental protection.

A tangential direction to this would be to revisit the ancient literature, the traditional knowledge and the environmental practices that focus on the various sustainable practices that contribute to holistic health and wellbeing of the biodiversity on one hand and the ecosystems of the world on the other. Ancient Indian literature, Arabic literature and Chinese literature to name a few and the aboriginal practices of the indigenous group that have not been recorded in print focus on the environmental practices that contribute to sustained environment and provide an impetus to incorporate the provisos in the world constitutions so as to guarantee a fundamental right on the environment through the practices [12-14].

The natural world of today has been completely altered by the industrial revolution and mechanization implemented for enhanced protection leading to the depletion of naturally available resources causing concentrated and widespread damage to the components that provide for life at large. The economic spurge towards increased gross domestic product has led to the insensitive use of technology to increase production in crops, animals and automation assisted by the artificial intelligence tools has led to the identification of hitherto unscathed and pristine and virgin ecosystems of the world to be explored and exploited for the benefit of humans. The issue is twofold in that on the one hand some nations believe they are above the rest and on the same premise some species, *Homo sapiens sapiens*, man to be specific, believe to be above the other genera that exist including the elements of nature that permit the very existentialism.

The legal protection of the traditional knowledge globally is ideally the most pragmatic and practical solution to curtail, curb and control the widespread destruction that is universally prevalent. The need of the hour is hence to understand the legal framework internationally and the scope of adoption and adaptation to the Indian system so as to ensure the protection of the traditional knowledge.

2. ANCIENT LITERATURE ON ENVIRONMENTAL SUSTAINABLE PRACTICES

The four primordial Vedas that are the basic tenets of the traditional knowledge of the Hinduism as a way of life following the Sanathana dharma are bereft with the sustainable principles with primary focus on the environment which is not considered as separate from the individual but as an integral component of the self in the perspective of the philosophy that drives the very sense and rules of life. The ancient Hindu philosophy focuses on the concept of conservation of energy as it advocates that energy can neither be created nor destroyed and can be converted from one form to another and hence the channelization of the energy to ensure the prudent and wise use of the naturally available resources to ensure sustenance leading to the attainment of salvation or Moksha was a key ingredient of the sustainable practice.

In ancient Indian traditionally knowledge is not confined to information but includes the know-how, skills and practices that are developed, practiced and passed on from one generation to the next within a community often leading to the conceptualization of a cultural or spiritual identity a community identity and a social norm. Traditional knowledge in itself refers to the knowledge resulting from the intellectual activity in a context from the past and had been in vogue and includes all the practices, skills, innovations and sustainable practices focused on protection and conservation of environment and use of the same to enhance the quality of life thus including the traditional medicine.

The major contributors to the ideology of traditional knowledge and medicine are the authors of the various *Puranas the Vishnu Purana in specific, the Mimansas, Charaka Shastra, Susruta Shastra and Kautilya's Arthashastra* in the later times. The traditional knowledge and medicine are the ideal sources of

the knowledge pertaining to environmental sustainability and besides the texts propounding them the practices are to be identified and protected under a regime of intellectual property and this is the legal protection that ought to be bestowed for the environmental practices which have been sustainable. Traditional knowledge is available in a wide variety of contexts that include the agricultural, scientific, technical, ecological and medicinal knowledge including the rich biodiversity-related knowledge in which are enshrined the information related to the use and application of the traditional knowledge.

Paatratva Dhanamaapnoti |

Dhanaat Dharmam Tatah Sukham ||

This shloka in Sanskrit means true/complete knowledge gives discipline, from discipline comes worthiness, from worthiness one gets wealth, from wealth one does good deeds, from that comes joy. This ancient Sanskrit proverb resonates of the power and value of knowledge. It also echoes the need for protection of traditional knowledge, a branch under intellectual property rights (IPR) that spurt on the global platform with the finalization of Convention on Biological Diversity (CBD), 1992.

India is a great practitioner of modern and traditional medicine, and rich source of raw materials. Medicinal plants are abound in the subcontinent, particularly in the Himalayan regions in Kashmir, the Western Ghats and Pakistan's North-West Frontier with huge reserves of herbal plants and remedies, many of which remain unknown to modern science. Screening wild herbs for medicinal use and research and development efforts would benefit from involving tribal people who are often experts in local herbal remedies.

Indigenous and local communities justly cherish traditional knowledge (TK) as a part of their very cultural identity. Known for their close proximity with nature, the tribes of India and indigenous communities at large use and reuse the naturally available resources for their survival and very existence simultaneously ensuring these resources are replenished and frequently refurbished as an inherent duty and obligation. The concept and belief of 'nature-man-spirit' is directly related to the origin of many tribes as these tribes are believed to have originated from the very plants and trees which are protected as

sacred grooves, hence enhancing and ensuring the protection of both biological and cultural diversity.¹

According to a report by WIPO^{iv} TK also has a strong practical component, since it is often developed in part as an intellectual response to the necessities of life: this means, more broadly, that it can be of direct and indirect benefit to society.

Protecting these resources and integrating them into modern medical practice would bring enormous benefits. Not only could we develop new drugs but we would also provide much needed job opportunities, from researchers and medical professionals to field workers and farmers in a country suffering an unemployment crisis.

The role of medicinal plants in extending the use and increasing the efficacy of existing drugs should be explored especially plants that might help in reversing resistance of some of the pharmaceutical preparations in the market.

3. INTERNATIONAL REGIME FOR TRADITIONAL KNOWLEDGE PROTECTION

The Convention on Biological Diversity (CBD, 1992), recognizes the quintessence of traditional knowledge and the inherent purpose of biological diversity at the global level which is extremely important from the perspective of indigenous people and local communities, the main feature of CBD.^v

The convention recognizes rights of the countries through the provisions of Article 8(j) which states the provisions for the maintenance of the benefits arising out of the protection of traditional knowledge.^{vi}

The other provisions of the CBD that proactively promote and protect the biodiversity inclusive of the indigenous tribal knowledge may be identified as "Article 10 (c) that states 'Protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation and sustainable use requirements', Article 10 (d) 'Support local population to develop and

implement remedial action plan in degraded areas where biological diversity has been reduced', Article 15 (1) 'Authority to determine access rests with national government' and Article 15 (2) 'Each contracting party shall facilitate- Biodiversity, tribal knowledge and life'² such that the access to genetic resources for environmentally sound uses by other Contracting parties and not to impose restrictions that run counter to the objectives of this Convention (CBD, 1992).³

According to the World Bank, operational directive 4.20, 1991⁴, "Indigenous peoples' can be identified in particular geographical areas by the presence in varying degrees of the following characteristics:

- close attachment to ancestral territories and to the natural resources in these areas;
- self-identification and identification by others as members of a distinct cultural group;
- an Indigenous language, often different from the national language;
- presence of customary social and political institutions; and
- primarily subsistence-oriented production⁵

"The International Labor Organization's (ILO) Convention concerning Indigenous and Tribal Peoples in Independent Countries (No.169) distinguishes between tribal and indigenous peoples as follows, highlighting also the importance of self-identification⁶

1.(a) Tribal peoples in independent countries whose social, cultural and economic conditions distinguish them from other sections of the national community, and whose status is regulated wholly or partially by their own customs or traditions or by special laws or regulations;

(b) Peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present

¹ Singh, B. P. (2017) 'Biodiversity, tribal knowledge and life in India' *Environment and Social Psychology*, 2(1) 1-10; <http://dx.doi.org/10.18063/ESP.2017.01.001>

² *Environment and Social Psychology* (2017)—Volume 2, Issue 1, Stan Weeber, 'Nodes of resistance to green grabbing: a political ecology'

³ <https://www.cbd.int/doc/legal/cbd-en.pdf> pg. 10

⁴ Report No. 25332 Implementation of Operational Directive 4.20 on Indigenous Peoples: An Independent Desk Review January 10, 2003 Operations Evaluation Department Country Evaluation and Regional Relations (OEDCR) p. p.7

⁵ The World Bank Operational Manual, 1991, p.1

⁶ OHCHR, 2013, p.2

State boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political institutions.

2. Self-identification as indigenous or tribal shall be regarded as a fundamental criterion for determining the groups to which the provisions of this Convention apply.

The importance and relevance of the plants and trees in the life of a tribe is not confined to economic viability and advantage but is ingrained in the social, cultural and traditional perspective so as to preserve the “age old tradition of tribal people” in the specified area.”

“International Labor Organization Convention 169 on Indigenous and Tribal Peoples is one of the key instruments relating to indigenous peoples and was adopted in 1989 being hence ratified by only 18 countries (as of January, 2007) of which 13 are in Latin America, (Argentina, Bolivia, Brazil, Colombia, Costa Rica, Dominica, Ecuador, Honduras, Guatemala, Mexico, Paraguay, Peru, and Venezuela). The other countries that have ratified the Convention to date are Denmark, Fiji, Norway, the Netherlands, and Spain”⁷

“Article 26 of the United Nations Draft Declaration on the Rights of Indigenous People, 1994, has clearly mentioned that indigenous peoples have the right to own, develop, control and use the lands and territories, including the total environment of the lands, air, waters, coastal seas, sea-ice, flora and fauna and other resources which they have traditionally owned or otherwise occupied or used. This includes the right to the full recognition of their laws, traditions and customs, land tenure systems and institutions for the development and management of resources, and the right to effective measures by States to prevent any interference with, alienation of or encroachment upon these rights.”⁸

“Article 27 further notes in this regard that ‘indigenous peoples’ have the right to the restitution of the lands, territories and resources which they have traditionally owned or otherwise occupied or used or damage without their free and informed consent. Where this is not possible,

they have the right to just and fair compensation. Unless otherwise freely agreed upon by the peoples concerned, compensation shall take the form of lands, territories and resources equal in quality, size and legal status.”⁹

Anthropologist Herskovits (1948) says that “culture is the man- made part of environment where human beings inculcate their ethos and adios and pass these to their future generation. In fact, tracing of ‘right to environment’ was done by recourse to Articles 48-A and 51-A of the Constitution of India, which are essentially post-modernist policies for eco-friendly development and citizens’ participation for conservation of natural resources. When the genesis of right to environment has such complex background; solid application of convergence amidst environmental, developmental and consensual or concerted act becomes an imperative.”¹⁰

The United Nations Educational, Scientific and Cultural Organization (UNESCO) General Conference on 2 November 2001 adopted the Universal Declaration on Cultural Diversity. This was accompanied by an Action Plan, wherein the new Universal Declaration insists, amongst other things, that cultural diversity, as a source of exchange, innovation and creativity, is as necessary for humankind as biodiversity is for nature.

“In this it is the common heritage of humanity and should be recognized and affirmed for the benefit of present and future generations” (Article 1) as cited by *Lucas-Schloetter* in 2008. He further cited that among the objectives set forth in the Action Plan, the Member States commit themselves to:

“Respecting and protecting traditional knowledge, in particular that of indigenous peoples, [and] recognizing the contribution of traditional knowledge, particularly with regard to environmental protection and the management of natural resources, and fostering synergies between modern science and local knowledge.”

4. LEGAL FRAMEWORK IN INDIA

The Survey conducted by the Ministry of Environment and Forests, Government of India,

⁷https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines; IFC. 2007; 2.

⁸Article 26 of the United Nations Draft Declaration on the Rights of Indigenous People, 1994, United Nations High Commissioner for Human Rights [UNHCHR]

⁹Ibid.

¹⁰Melville Jean Herskovits, *Man and His Works: The Science of Cultural Anthropology*, Knopf, 1948

All India Ethno-biology Survey revealed that there are “more than 7,500 species of plants that are being used by 4,635 ethnic communities for human and veterinary health care across the country.”

“The Parliament of India passed the Biological Diversity Act in the year 2002, to protect, preserve and evolve the sustainable use of natural resources. Section 2 (b) of the Biological Diversity Act,¹¹ 2002 defines biological diversity as: ‘The variability among living organisms from all sources and the ecological complexes of which they are part of, and include diversity within species or between species and of ecosystems’. Section 2 (c) further notes that the biological resources means plants, animals and micro-organisms or parts thereof, their genetic material and by-products (excluding value added products) with actual or potential use or value, but does not include human genetic material.

Traditional knowledge in the Indian context is protected primarily under the provisos of the Biological Diversity Act. The salient features of the Act are to: (a) regulate access to biological resources of the country with the purpose of securing equitable share in benefits arising out of the use of biological resources; and knowledge relating to biological resources; (b) conserve and sustainable use of the biological diversity; (c) respect and protect knowledge of local communities related to biodiversity; (d) secure sharing of benefits with local people as conservers of biological resources and holders of knowledge and information relating to the use of biological resources.”¹²

As a Central Law the Act lays emphasis on the establishment of State Biodiversity Board under Section 22 (1) at State levels as well as Biodiversity Management Committees (BMCs) under “Section 41 (1) at local levels by respective State Governments that has to play vital role in the conservation and preservation of biodiversity.

Section 41 (3) of the Act further reads that ‘the Biodiversity Management Committee through Gram Sabha may levy charges by way of collection fees from any person for accessing or collecting any biological resources for commercial purpose from area falling in its jurisdiction. The fee so collected shall be deposited with the concerned Gram Sabha’.”

“The Protection of Plant Varieties and Farmers’ Rights Act, 2001 known as PPVFR Act is a major tool in this regard. The purpose of this Act is to protect the plant varieties with an effective sue generis system and at the same time to also ensure the availability of quality seeds having high yields. There have been series of legal enactments like the Copyright Act 1957, the Patent Act 1970; the Trademarks Act 1999, the Geographical Indications of Goods (Registration and Protection) Act 1999, and the Designs Act 2000 which provide protection to traditional knowledge without having any specific and concrete legal enactments.”

The importance of traditional knowledge has been vividly highlighted by “the Draft National Tribal Policy, 2006. ‘The wisdom of indigenous or tribal people related to their expertise in the field of TK is known all over the world and is reflected in their water harvesting techniques, indigenously developed agricultural practices and irrigation systems, construction of cane bridges in hills, adaptation to desert life, utilization of forest species like herbs and plants for medicinal purposes, meteorological assessment etc. This invaluable knowledge needs to be properly documented and preserved to prevent it getting lost as a result of “modernization” and the passage of time.”¹³

WIPO (World Intellectual Property Organization) describes the two concepts of Prior Informed Consent and Equitable Balancing of Interests which are pertinent in understanding and interpreting the provisions of the indigenous peoples’ role and relevance to Biodiversity protection. “According to the principle of prior informed consent (PIC), TK holders should be fully consulted before their knowledge is accessed or used by third parties and an agreement should be reached on appropriate terms; they should also be fully informed about the consequences of the intended use. The agreed scope of use may be set out in contracts, licenses or agreements, which would also specify how benefits arising from the use of the TK should be shared. The principle of PIC concerning access to genetic resources is one of the cornerstones of the CBD. Given the close relationship between genetic resources and some forms of TK, this same principle is also used in a number of national laws concerning access to and use of TK.

¹¹Sec 2, United Nations Convention of Biodiversity, 1992; <https://www.cbd.int/doc/legal/cbd-en.pdf> ;

¹² The Biological Diversity Act (BDA), 2002

¹³ The Draft National Tribal Policy, 2006, Ministry of Tribal Affairs, 2006, p.18

The idea of an equitable balancing of interests is common to many legal systems. In Intellectual Property IP law, this is often phrased in terms of a balancing of the interests of right holders and the general public. The fair and equitable sharing of benefits from the use of genetic resources is one of the objectives of the CBD, and the CBD also encourages equitable sharing of benefits from the use of certain forms of TK. Thus, the principle of equitable benefit-sharing is found in a number of national laws governing access and use of TK, especially when TK is associated with genetic resources. According to this principle, the TK holders would receive an equitable share of the benefits that arise from the use of the TK, which may be expressed in terms of a compensatory payment, or other non-monetary benefits. An entitlement to equitable benefit-sharing may be particularly appropriate initiations where exclusive property rights are considered inappropriate.”

“Two key demands on the IP system in particular have arisen in policy debate: first, the call for recognition of the rights of TK holders relating to their TK, and, second, concerns about the unauthorized acquisition by third parties of IP rights over TK. Two forms of IP-related protection have therefore been developed and applied:

Positive protection: giving TK holders the right to take action or seek remedies against certain forms of misuse of TK; and

Defensive protection: safeguarding against illegitimate IP rights taken out by others over TK subject matter.

Stakeholders have stressed that these two approaches should be undertaken in a complementary way. A comprehensive approach to protection in the interests of TK holders is unlikely to rely totally on one form or the other.”

The protection under the Intellectual property regime and the constitutional right that ought to be bestowed so as to recognize, facilitate and felicitate the traditional knowledge decants to the five primary reasons for its protection namely, equity, conservation of biodiversity, preservation of traditional practices, prevention of bio-piracy and the promotion of the use and importance of traditional knowledge in development through a well defined system and legal framework.

The Constitution of India has made important provisions for the development and welfare of the

tribes. Educational & Cultural Safeguards of the tribes are covered under Articles 15(4), 29, 46, 350, 350A, when Social Safeguards are covered under Articles 24. Economic Safeguards for the tribes are covered under Article 244 and 275 (under 5th and 6th Schedule. Political Safeguards for the tribes are covered under Articles 164(1), 330, 332, 334,243, 371(A, B, C, F, G & H), when Service Safeguards are provided under Articles 16(4), 16(4A), 330, 332 and 335 provides reservation of seats in the Legislative Assemblies in the states. These formal and codified laws when identified with the incorporation of the protection of the traditional practice would make safeguard of the rights more comprehensive and cohesive.

The Honorable Supreme Court delivering the judgment in the case of *Samantha v. State of A.P.*[1997]8 SCC 191 observed that “Agriculture is the only source of livelihood for scheduled tribes, apart from collection and sale of minor forest produce to supplement their income. Land is their most important natural and valuable asset and imperishable endowment from which the tribals derive their sustenance social status, economic and social equality and permanent place of abode and work and living. It is a security and source of economic empowerment. Therefore, the tribes too have great emotional attachment of their lands. The land, on which they live and till, assures them equality of status and dignity of person and means to economic and social justice and is a potent weapon of economic empowerment in a social democracy”

India has been proactive the conservation of biodiversity and it has been a pioneer in compiling the data on traditional medicines in the Traditional Knowledge Digital Library (TKDL) and there are also varied experiments on documentation undertaken by the village communities, particularly in Kerala, which is one of the richest biodiversity states in India.

5. CHALLENGES TO TK

One of the challenges posed by the modern age is to find ways of strengthening and nurturing the roots of TK, even in times of social dislocation and change, so that the fruits of TK can be enjoyed by future generations, and so that traditional communities can continue to thrive and develop in ways consistent with their own values and interests. At the same time, TK holders stress that their TK should not be used by others inappropriately, without their consent

and arrangements for fair sharing of the benefits; more generally, it leads to calls for greater respect and recognition for the values, contributions and concerns of TK holders.

Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore (“IGC”) was established in 2001 as an international policy forum to address the challenges to the protection and regulation issues surrounding the traditional knowledge domain.

WIPO’s work therefore ranges from the international dimension of TK and cooperation with other international agencies, to capacity building and the pooling of practical experience in this complex area.

6. CONCLUSION

Laws exist and conventions have been signed by the world nations towards the beneficial use of traditional knowledge imbibed in the global indigenous and tribal populace and yet there are pertinent issues of the sustenance of the sustainability of these resources owing to the dynamics of social environment and the concerns of migration from the rural and tribal landscapes to urbanization or better standard of living, precisely called historical dislocation.(Vinjamuri, 2020)¹⁴ Addressing these issues so as to revive the traditional practices through the stringent and fair implementation of the provisions of the CBD and the Nagoya Protocol is perhaps the way ahead to strengthen the traditional knowledge protection and this can be achieved with a resolve that truly does apprehend, approve, acknowledge and appreciate the need to safeguard TK for the benefit of future generations.

The functionality of the traditional knowledge can be effectively and efficiently enhanced through the recognition of not only the technological value (in medicine and drugs) but on extending it to the realms of cultural, intellectual and social domains which gives a holistic impetus to protect and provide for the indigenous dwellers of the tribal lands.

The initiative without any doubt requires economical viability through the protection by the various tools of intellectual property protection

whose traditional qualities and frequent close linkage with the natural environment mean that TK can form the basis of a sustainable and appropriate tool for locally-based development providing a potential avenue for developing countries, particularly least-developed countries, to benefit from the knowledge economy.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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ⁱ The Convention of Biodiversity

ⁱⁱ Access Benefit Sharing

ⁱⁱⁱ United National General Assembly in 1972

^{iv} "Maintaining the distinct knowledge systems that give rise to TK can be vital for their future well-being and sustainable development and for their intellectual and cultural vitality. For many communities, TK forms part of a holistic world-view, and is inseparable from their very way of life and their cultural values, spiritual beliefs and customary legal systems. This means that it is vital to sustain not merely the knowledge but the social and physical environment of which it forms an integral part."

^v "The objectives of Article 1 of the CBD are the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the utilization of the genetic resources by appropriate transfer of technologies, taking into account all rights over those resources and to technologies, and by appropriate funding (CBD, 1992). The CBD is based on reciprocity and the convention recognizes biological resources to be used by other countries that do not harbour the genetic resources with consent from the countries widening the horizon for additional support from developed countries to resources existing in developing countries."

^{vi} "Subject to national legislation respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovation and practices and encourage the equitable sharing to the benefits arising from the utilization of such knowledge, innovations and practices."

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