

FROM INDIGENOUS HERITAGE TO INTELLECTUAL PROPERTY: A COMPARATIVE STUDY OF TRADITIONAL KNOWLEDGE PROTECTION IN INDIA AND GLOBALLY

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ABSTRACT

Traditional Knowledge (TK), embedded in the cultural heritage, practices, and innovations of indigenous and local communities, has increasingly attracted global attention due to its economic, medicinal, agricultural, and environmental value. However, the conventional intellectual property rights (IPR) framework, originally designed to protect individual and commercially driven innovations, often fails to adequately safeguard the collective, intergenerational, and dynamic nature of traditional knowledge. This research article undertakes a comparative legal study of the protection of traditional knowledge in India and at the global level, critically examining the evolution from community-based heritage systems to formal intellectual property-oriented mechanisms. The paper analyses India's sui generis and legislative responses, including the Biological Diversity Act, 2002, the Protection of Plant Varieties and Farmers' Rights Act, 2001, the Traditional Knowledge Digital Library (TKDL), and judicial interventions addressing bio-piracy and misappropriation. These are evaluated alongside international and regional frameworks such as the Convention on Biological Diversity (CBD), the Nagoya Protocol on Access and Benefit Sharing, the World Intellectual Property Organization's Intergovernmental Committee (WIPO-IGC) negotiations, UNESCO conventions, and selected national models from jurisdictions such as Peru, South Africa, and Australia. Through doctrinal and comparative analysis, the article explores key challenges in traditional knowledge governance, including definitional ambiguities, community consent, equitable benefit-sharing, cross-border enforcement, & tension between customary laws and formal intellectual property regimes. It argues that while global efforts increasingly recognize the need to protect traditional knowledge, existing mechanisms remain fragmented and

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inadequately aligned with indigenous worldviews and collective ownership structures.

KEYWORDS: Traditional Knowledge, Indigenous Communities, Bio-piracy, Comparative Law, Nagoya Protocol, Access and Benefit Sharing, Sui Generis Protection.

INTRODUCTION

The traditional body of knowledge consists of the skills, innovations, practices, and cultural expressions that the indigenous and local communities create, maintain and transmit over the years. It encompasses different spheres of life like medicine, agriculture, biodiversity, conservation, and spiritual practices. Most of the time, it is not scripted and is owned collectively, evolving through collective use and adaptation. It also differs from modern scientific knowledge which is almost always formally documented (Sengupta, 2018). Recently, traditional knowledge systems have gained significance as a result of the growing adoption of biotech, pharmaceuticals, agriculture, and cosmetics. While the exploitation of these fields has led to the emergence of new sources of income, it has also revealed the inadequacy of the existing structures of intellectual property systems. The traditional forms of intellectual property systems standards like patents, copyrights and trademarks are based on limited authorship, novelty, fixed time, and territoriality. These principles are in fundamental contradiction to the nature of traditional knowledge which is collective, inter-generational, and trans-boundary.

The increasing frequency of bio-piracy has pinpointed this specific misalignment. When foreign entities patented turmeric with wound healing properties, neem-based products, and various basmati rice strains, there was international concern about the ability of traditional knowledge to be appropriated. The courts and administrative bodies involved in these disputes revealed the drawbacks of defensive patenting & need for more positive protection strategies (Khurana and Sharma, 2025). India has increasingly become an experimentation site for the protection of traditional knowledge, in part, due to India's status as one of the world's most biodiverse countries, combined with the diversity of its indigenous peoples. India has established an intricate and multi-layered system that integrates traditional biodiversity law with components of farmers' rights, positive documentation, and benefit-sharing. India's continuous domestic development has paralleled shifting global dialogues concerning the Convention on Biological Diversity, the Nagoya Protocol, & various iterations of WIPO's

Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore (WIPO, 1993).

This article analyzes India's proposals in the context of the global attention being paid to the protection of traditional knowledge. Specifically, the article analyzes whether the movement from heritage systems to frameworks that are anchored in intellectual property systems has genuinely benefited traditional knowledge systems holders, or whether it has, chiefly, reconstituted collective knowledge into legally actionable forms for the marketplace. Through a comparative approach, the author analyzes contemporary systems of protection and reviews the effectiveness, challenges, and primary assumptions of the systems and proposes options for greater culturally attuned and just systems of protection.

THE TRADITIONAL KNOWLEDGE: AN OVERVIEW

Traditional knowledge remains a source of legal imprecision. International legal documents, domestic legislation, and legal positivist doctrines employ different names, such as, for example, "indigenous knowledge", "local knowledge", or "traditional cultural expressions". Despite this diachronic and diverse use of terminology, there are some attributes that are constant. The knowledge possessed is, in the majority of the instances, collective, spontaneously generated and has no individual author. It is acquired through experience and is not recorded in writing, and it is usually associated with a specific geographical area or bioregion and is governed by a legal regime of customs and not the formal law (Jose and Manchikanti, 2022).

To Indigenous Peoples, traditional knowledge/ sacred knowledge are not simply practical knowledge streams. For them, all knowledge streams are intertwined with cultural identity & spirituality of the people. The pathways of knowledge of medicinal plants, agricultural cycles, & management of the ecosystem, are closely tied with the rituals, social structures, beliefs and customs of the people. The holistic systems of knowledge of the Indigenous Peoples are worlds apart from modern intellectual property laws that are compartmentalized and tend to separate or dissociate innovation and its cultural and ecological values.

Traditional knowledge also adds to complexity of its legal treatment because of its unique and different temporality. Unlike patents that are time bound and require novelty, traditional knowledge evolves. It means that traditional knowledge evolves in its own time. It transforms and adds value in the process because of its durability. It is almost the opposite of what the

modern intellectual property laws are designed to promote. For that very reason, traditional knowledge often falls to the public domain of modern intellectual property laws. It remains unprotected, even though its values, beliefs, and customs are highly integral to the culture of the people (Chouhan, 2012).

These conceptual tensions best describe the political, social, and legal efforts of national and international bodies in trying to address the gaps of the Indigenous Peoples' traditional knowledge and modern intellectual property laws. The focus of the subsequent parts of the paper is on the efforts of India & international community in this regard.

THE PROTECTIVE FRAMEWORK OF TRADITIONAL KNOWLEDGE IN INDIA

Several experts in India's traditional knowledge protection acknowledge the efforts of the Indian authorities and scholars in the area of traditional knowledge protection. India's efforts go beyond the use of conventional intellectual property protection. India seeks to use a comprehensive approach by intertwining the preservation of biodiversity, the protection of the rights of the practitioners of traditional knowledge, & documentation and benefit sharing components. This shows an understanding that traditional knowledge is a social and cumulative product that must be protected beyond the use of a monopoly rights framework (Ragavan, 2002).

The Biological Diversity Act, 2002 is the primary source of India's traditional knowledge legislation. It provides a framework in response to India's obligations under the Convention on Biological Diversity which aims to govern the use of traditional knowledge associated with biological resources & equitable sharing of benefits to the local people.

The Act creates a three-tier institutional framework consisting of the National Biodiversity Authority (NBA), the State Biodiversity Boards, & local Biodiversity Management Committees (BMCs). Of special importance, section 6 of the Act requires applicants seeking any intellectual property rights relating to research or information pertaining to Indian biological resources and associated knowledge to obtain prior approval of the NBA. This provision mitigates the risk of bio-piracy and brings the protection of intellectual property rights within the framework of access and benefit-sharing.

The community-centric focus of the Act is strengthened by its interpretation in the courts. In *Divya Pharmacy v. Union of India* (Uttarakhand High Court, 2018), the court supported the position of the NBA to impose benefit-sharing conditions on commercial users of biological

resources and recognized the right of economic benefit access to the holders of the concerned traditional knowledge (*Divya Pharmacy v. Union of India*, 2018 SCC OnLine Utt 1742). The court ruling, in writing, emphasized that benefit-sharing is no longer a matter of grace and good will, but a matter of right, arising from treaty obligations of the Republic of India.

While the BDA might be seen as trying to be progressive, it has been criticized for having high bureaucracy, and for having minimal participation from the bottom. Many of the Biodiversity Management Committees are understaffed and or under-skilled, & sharing of benefits is usually settled without proper consultation with the community. Still, it is an Act that provides movement away from an IP-centric model to a more rights-based and equitable conservation orientation.

The Protection of Plant Varieties and Farmers' Rights Act, 2001 (PPVFR Act) represents an effort from India to safeguard farmers' traditional knowledge while attempting to comply with the TRIPs Agreement. This Act is different from typical plant breeders' rights regimes because it acknowledges farmers as cultivators, conservers, and breeders of plant varieties (Gopalakrishnan, 2005).

Farmers, according to Section 39 of the Act, have the right to save, use, exchange, and sell the product of their farms, which also includes the seeds of protected varieties, with some limitations. The Act is significant because it recognizes the value of the traditional farming communities who have contributed to the conservation and development of plant genetic resources. The creation of the National Gene Fund is intended to implement benefit sharing and reward systems for communities that have maintained landraces and traditional varieties.

In *Monsanto Technology LLC v. Nuziveedu Seeds Ltd.* (FAO (OS) (COMM) 86/2017), the Supreme Court of India dealt, albeit indirectly, with the possible conflict between the patent system & plant variety protection system in India. Although the case centered around the issue of patentability of genetically modified seeds, the Court, once again, reaffirmed the legislative purpose of the PPVFR Act aimed at curbing the monopolization of plant genetic resources, and protecting the interests of the farmers. The ruling highlighted the attempt of India's legal system to prevent the erosion of the agricultural tradition and knowledge through over monopolistic claims on it.

One of the most original and innovative ideas to safeguard India's interests against bio-piracy, is the management and creation of the Traditional Knowledge Digital Library. TKDL is the

result of a partnership between the Council of Scientific and Industrial Research (CSIR) & Ministry of AYUSH. The TKDL catalogues traditional knowledge, which is medicinally oriented, and is derived from classical literature of Ayurveda, Unani, Siddha, and Yoga (Kaur, 2021).

By creating a different, and more user-friendly, representation of traditional knowledge, the TKDL assists patent offices around the world in identifying and rejecting baseless patent claims. The success of the TKDL has been demonstrated through its ability to help revoke and withdraw a number of patent applications including turmeric, and other formulations, neem and ashwagandha.

TKDL is a prime example of a great initiative but does have some flaws. Documenting details at scale prevents knowledge from evolving and could result in the misuse of community sensitive information. Also, the TKDL serves a more defensive purpose. It doesn't offer a positive proprietary right and does not guarantee the traditional knowledge holders receive any benefit from sharing that knowledge.

The Indian Judiciary System has been notable in defining the borders surrounding traditional knowledge and bio-piracy. A prime example is the turmeric patent controversy that is often referenced. A patent from the United States Patent and Trademark Office was issued for the properties of turmeric that heal wounds, but the USPTO patent was revoked following a challenge backed with Documented Traditional Knowledge (*Council of Scientific and Industrial Research v USPTO, Patent Reexamination Case*, 1997).

In the same way, there was a successful challenge of a patent obtained for neem pesticides in Europe arguing that the inventions in the patent lacked novelty & practices are traditional agriculture of India (Neem Case, European Patent Office, Opposition Proceedings, 2000). These types of cases have shown the traditional knowledge's lack of protection in the existing frameworks of intellectual property and traditional knowledge systems at the international and national levels (Ganeshan, 2016).

Indian courts have begun to acknowledge the constitutional implications of traditional knowledge. In the case of *Samatha v. State of Andhra Pradesh* (AIR 1997 SUPREME COURT 3297), although it is not an intellectual property case, the Supreme Court examined the relationship the native people of this country have with the land & resources. He described the need to defend the autonomy of the tribes and their traditional rights. Such case law serves as

a basis of legal doctrine for the integration of traditional knowledge protection with the constitutional values of the poor, the cultural rights & social justice.

What the Indian legal system on the protection of traditional knowledge shows is a practical acknowledgment of the shortcomings of conventional IP Law. With the fusion of biodiversity law, farmers' rights, and judicial activism, the protection of traditional knowledge is law is contextually relevant to indigenous people (Nagbhidkar, 2025).

However, challenges remain. Implementation is always inconsistent, the distribution of benefits is unequal, & participation of communities is more of a show than anything real. Furthermore, illegitimate appropriation of traditional knowledge is often done through cross-border commercial transactions and international collaborative research, while the Indian model strictly adheres to the nation state.

GLOBAL FRAMEWORKS FOR THE PROTECTION OF TRADITIONAL KNOWLEDGE

International law has begun addressing the fragmentation of traditional knowledge protection systems; especially concerning intellectual property law, protection of biodiversity, & rights of indigenous peoples. Legal systems around the world continue to remain fragmented and India's domestic legal regime is pieced together. A lot of work has gone into incorporating systems that acknowledge traditional knowledge. However, the lack of a universal and consistent legal approach continues to inhibit meaningful protection of traditional knowledge.

The Convention on Biological Diversity initiated a completely new consideration of the protection of traditional knowledge on the world stage, since its adoption in the year 1992. The 8(j) of the CBD of the knowledge, innovations, and practices of the indigenous and local communities is aimed at the conservation of biodiversity. The CBD also aims at equitable and fair benefit sharing concerning the access and use of such knowledge (Cropper, 1993).

Even though Art. 8(j) has remained an important addition to legal instruments, its implementation has been patchy. The CBD does not create direct, legally enforceable rights for Indigenous peoples, nor does it provide mechanisms to address and respond to the problem of appropriation and misappropriation and relies on domestic implementation, which creates a very uneven legal patchwork. Nevertheless, it has served as the basis for the development of access and benefit-sharing systems and national laws on biodiversity.

The principles of the CBD that have been recognized in international law, combined with the CBD and its international legal principles relating to the environment and human rights, provide a solid basis for legal arguments. In *Awas Tingni v. Nicaragua* (Inter-American Court of Human Rights, 2001), the court recognized the Indigenous peoples' collective rights to their traditional lands and resources and made the important connection between the right to culturally survive & right to control (exploit) traditional knowledge. Though this is not an IP case, this case has been important in the development of the thinking of traditional knowledge as a collective right of human beings

The Nagoya Protocol was created in 2010 alongside the Convention on Biodiversity. This Protocol offers the first substantive hints on how to achieve the operationalization of benefit-sharing. It covers the legal access of genetic resources & associated traditional knowledge of the concerned party(s) via prior informed consent (PIC) and mutually agreed terms (MAT) (Trujillo, 2025).

One of the unique aspects of the Protocol compared to previous drafts of Access and Benefit Sharing (ABS) is the integration of the local and Indigenous communities as traditional knowledge holders. This means local and Indigenous communities are fair and equitably compensated for the knowledge they possess. This is a marked shift compared to previous drafts, which primarily focused on the conservation of the resources.

The Nagoya Protocol's main problem is the lack of full and voluntary participation of the countries of the world. This means the Protocol's reach and effectiveness is very limited. Since the majority of the world is not part of the Protocol, these bioprospecting benefit-sharing disputes are often left unsolved rather than analyzed in a court of law, leaving many unresolved legal questions.

The World Intellectual Property Organization's Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge, and Folklore (WIPO-IGC) provides the most relevant international forum for the discussions on the protection of IP pertaining to Traditional Knowledge. While the IGC was established in 2000, they have been engaged in long-term discussions to develop several international legal instruments that would aim to protect the rights of the creator or originator, establish equitable benefit sharing, and prevent the misappropriation of the work (Bhukta, 2020).

The work of the IGC presents the high level of conceptual disagreements between States. On the one hand, developed countries generally support non-binding guidelines and defensive protection such as databases and disclosure. On the other hand, developing regions support legislation that provides legal protection and enforcement and provides for affirmative rights and protection of Traditional Knowledge. The Indigenous voice has usually been clear that these IP focused options are inadequate and that they incorporate an overarching need to respect and support the customary law of the people, along with self-determination.

The IGC is an example of the complexity and breadth of legal frameworks and competing interests on a global stage. The IGC has been in discussions for over 20 years and still has not produced a legally binding treaty. Most countries are still reluctant to introduce and escalate regulations for IP international treaties. Draft texts of the IGC have had a global impact, especially on the domestic and regional legislation of other nations, such as the requirements and documentation strategies in India.

Traditionally, UNESCO has viewed the heritage of the peoples of the world, including traditional knowledge, as something more than economically exploitable resources. Cultural heritage is recognized by UNESCO, while the Convention for the Safeguarding of the Intangible Cultural Heritage lists elements of the cultural heritage, which include oral history, music and dance, social rituals, and arts and crafts, as they relate to the identity of a people (Jain, 2023).

Although customarily UNESCO has focused on the economically non-exploitive uses of the heritage of the world's peoples, they do not focus on the lack of equitable sharing of non-exploitive uses, uses of the heritage that can be described as "misappropriation". Thus, UNESCO has limited capacity to protect traditional knowledge from the phenomenon of "bio-piracy". Even so, the cultural heritage perspective helps to work within the global frameworks and national legal systems on the protection of biodiversity and traditional knowledge that are of non-economic value.

Sometimes, on the protection of cultural heritage of the peoples of the world, courts have offered some guidance on the protection litigation involving indigenous peoples. In the *Mabo* case, the High Court of Australia, for the first time, recognized the doctrine of terra nullius was not applicable, and instead, recognized indigenous people's legal rights & value of their customs and traditions (*Mabo v. Queensland (No. 2)*, (1992) 175 CLR 1). This case has played

a significant role in the legal discourse on traditional knowledge & customary laws that have evolved since.

The Law No. 27811 constitutes an example of one of the most inexorable sui generis regimes for the protection of traditional knowledge in Peru. It sets a system for the protection of the collective knowledge of the indigenous peoples of Peru. The Law embraces the indigenous community as collective right holders with respect to the traditional knowledge, & Law mandates benefit sharing for the commercial utilization of the traditional knowledge.

The Peruvian model is pivotal due to its approach towards community consent and community contractual arrangements. However, the limited community contractual arrangements are a result of Peru's limited enforcement capability & difficulties of ascertaining and identifying the representative authorities of a given community.

The Protection, Promotion, Development and Management of Indigenous Knowledge Act, 2019 of South Africa is an attempt to deal with the merging of the components of intellectual property and cultural heritage, and customary law. It provides for the establishment of a national repository of indigenous knowledge, benefit-sharing agreements, and community ownership (Roy, 2024).

The South African courts, particularly in the area of cultural rights & right to equality, have dealt with the indigenous knowledge issue in the constitutional sphere. The Constitutional Court in *Alexkor Ltd v. Richtersveld Community* (2003 (12) BCLR 1301 (CC)) acknowledged the status of indigenous customary law within the legal order as a source of rights, and this affirmed the community-based knowledge systems.

Australia's legal system is still fragmented and relies on a combination of common law doctrines, statutory protections, and policy initiatives. Courts have recognized the cultural land rights of the Indigenous Australians, yet the traditional knowledge of Indigenous Australians is still not sufficiently protected under the IP laws. This being the case, Indigenous Australians have made calls for more comprehensive legal protections grounded in Indigenous self-determination (Kumar, 2020).

The Indigenous knowledge protections advocates have shown a growing recognition of the value of traditional knowledge. However, the mechanisms of protections still do not sufficiently reflect the worldviews of the Indigenous people. The following sections analyze,

in an attempt to assess and understand the challenges, the comparative models, India, to the global stretch of the models.

CRITICAL CHALLENGES AND COMPARATIVE ASSESSMENT

Although there has been an increase in international acceptance of traditional knowledge, the existing frameworks of protection in India & world continue to struggle with the same structural and conceptual issues. Definitional ambiguity remains a primary concern. When it comes to traditional knowledge, intellectual property law considers novelty, singular authorship, and a limited timeframe and, therefore, traditional knowledge is, unfortunately, treated as part of the public domain and is commercially exploited as such without permission or compensation.

The lack of prior informed consent and benefit sharing is the second of these challenges. Although the Nagoya Protocol and India's Biological Diversity Act do recognize these principles, there is still a large disparity in enforcement. Negotiations are often top-down and communities are left out, benefit-sharing is vague, & provision of financial resources to the community is often never realized. This disconnects between the legal framework, & actual participation of the community undermines the system's legitimacy.

The challenges of cross-border enforcement are also significant. The Other Transnational Challenges That Affect Traditional Knowledge Protection are of a cross-border nature. Traditional knowledge, which is a type of knowledge that is shared and collectively owned, is often disseminated across multiple and inter-related communities and regions that do not correlate with present-day geopolitical boundaries. Likewise, knowledge protection mechanisms remain largely territorial, which is insufficient when multinational corporations are involved in international disputes over intellectual property where traditional knowledge from one country is patented in a different country. This lack of a comprehensive international legal framework on the protection of traditional knowledge further limits the legal options available to the communities that are the original source of the knowledge.

The tensions between the informal/ customary legal systems & formal/state legal systems also remain largely unaddressed. Indigenous communities often govern the circulation of knowledge through informal/customary systems that emphasize stewardship, collective responsibility, and, in some cases, spiritual relations. These systems are in stark contrast to formal legal systems, which are typically state-centered and, in most jurisdictions, focus on

commodification and enforcement. While the recognition of customary law in certain jurisdictions (e.g., India, South Africa) has been on the increase (e.g., *Samatha v. State of Andhra Pradesh*, (1997) 8 SCC 191; *Alexkor Ltd v. Richtersveld Community*, 2003 (12) BCLR 1301 (CC)), the intellectual property regime has not been the main beneficiary of this recognition.

India's model is the most varied and has the most robust defensive protection mechanisms with the Traditional Knowledge Digital Library. However, there are still barriers due to red tape and a lack of community. International systems promote the idea of free trade protection and flexible systems but are fragmented and lack enforceability. The potential of countries like Peru and South Africa is known, but they still face the same barriers of lack of implementation and lack of potential with sui generis legislation.

CONCLUSION

The comparative analysis undertaken in this study demonstrates that while there has been a marked shift from viewing traditional knowledge merely as cultural heritage to recognizing it as a subject of legal and economic value, existing intellectual property frameworks remain fundamentally ill-suited to capture its collective, intergenerational, and culturally embedded nature. Both India & international community have made notable progress through biodiversity laws, access and benefit-sharing mechanisms, and defensive protection strategies such as documentation and disclosure requirements. However, these measures largely operate within state-centric and market-oriented paradigms that continue to privilege formal innovation over lived knowledge systems. As a result, traditional knowledge protection remains fragmented, unevenly enforced, and often disconnected from the customary laws, spiritual values, and governance structures of indigenous and local communities. The persistent gaps in prior informed consent, equitable benefit-sharing, and cross-border enforcement underscore the limitations of relying predominantly on conventional intellectual property doctrines to safeguard indigenous heritage.

Looking forward, this paper argues for a holistic and rights-based reorientation of traditional knowledge protection that transcends narrow intellectual property logics. Such an approach must integrate intellectual property law with biodiversity conservation regimes, international human rights norms, & recognition of indigenous customary law as a legitimate source of rights and obligations. At the international level, there is an urgent need for greater consensus on a legally binding instrument, particularly within forums such as WIPO, that explicitly

acknowledges indigenous peoples and local communities as collective rights holders, rather than mere stakeholders. Binding norms on disclosure of origin, prior informed consent, and benefit-sharing must be accompanied by effective compliance and enforcement mechanisms capable of addressing transnational misappropriation. Equally important is the meaningful participation of indigenous representatives in global norm-setting processes, ensuring that protection models reflect indigenous worldviews rather than retrofitting traditional knowledge into existing commercial frameworks.

In the Indian context, while the country's multi-layered approach, combining biodiversity legislation, farmers' rights, judicial interventions, and defensive documentation, offers valuable lessons for other jurisdictions, its future effectiveness depends on deeper community empowerment and institutional reform. Strengthening local governance bodies, ensuring genuine community consultation, improving transparency in benefit-sharing arrangements, and according due weight to customary laws are essential to move beyond symbolic protection. More broadly, this study contends that safeguarding traditional knowledge requires a paradigm shift in how law conceptualizes ownership, innovation, and justice. Rather than treating traditional knowledge as a resource to be enclosed or commodified, legal systems must recognize it as a living, relational, and evolving body of knowledge integral to cultural survival and sustainable development. Only through such a pluralistic and culturally responsive framework can traditional knowledge protection become both equitable and effective in an increasingly globalized world.

