
Heritage Under Siege: Indigenous Knowledge, Intellectual Property, and the Demand for Legal Redress

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Abstract

Preservation of Indigenous Knowledge stands as a critical challenge in the 21st century, necessitating the development of effective models to safeguard and transmit traditional knowledge systems and values to future generations. The intersection of modern Intellectual Property Rights systems and Traditional Knowledge is complex because conventional IPR regimes such as patents, trademarks, and copyrights are rooted in notions of individual ownership, novelty, and limited duration of protection. These principles frequently clash with the communal, intergenerational, and often intangible characteristics inherent in Indigenous Knowledge. The expansion of Intellectual Property Rights through international agreements, such as the World Trade Organization's Trade-Related Aspects of Intellectual Property Rights Agreement, has exacerbated the risks of misappropriation and exploitation of Indigenous Knowledge. Globalization, environmental degradation, and technological advancements collectively pose significant threats to the longevity of Indigenous Knowledge, potentially leading to its erosion and loss. Pressures of commercialization further intensify these vulnerabilities, as Indigenous Knowledge is increasingly sought after for its potential economic value in sectors such as pharmaceuticals, agriculture, and cosmetics.

This article explores the intricate relationship between Indigenous Knowledge (IK) systems and contemporary Intellectual Property Rights (IPR) frameworks. It critically examines how existing legal structures often fail to protect the collective and intergenerational nature of IK, leading to instances of biopiracy and cultural appropriation. Drawing upon international treaties, national legislations, and case studies, the paper advocates for a sui generis legal approach that harmonizes customary laws with formal IPR systems to ensure equitable benefit-sharing and the preservation of indigenous heritage.

Keywords: - Indigenous Knowledge, Intellectual Property Rights, WIPO, TKDL, Biopiracy, Cultural appropriation.

1. INTRODUCTION

Indigenous Knowledge is an integral part of the cultural heritage of indigenous and local communities. It plays a crucial role in biodiversity conservation, healthcare, and the maintenance of cultural identity. It encompasses a wide array of knowledge, innovations, and practices passed down through generations, deeply rooted in specific cultural and environmental contexts. Indigenous Knowledge provides invaluable insights into sustainable resource management, traditional medicine, and climate change adaptation, reflecting centuries of close interaction between indigenous peoples and their environments. Legal mechanisms designed to protect intangible knowledge have been notably insufficient, particularly when such knowledge is not expressed in a tangible format. The rise of profit-driven entities and the enforcement of exclusivity through Intellectual Property Rights

have led to the exploitation of pre-existing traditional knowledge, highlighting the urgent need for the protection of it.

The inadequacies of existing Intellectual Property Rights frameworks in safeguarding Indigenous Knowledge have spurred calls for the development of sui generis legal mechanisms that recognize the unique characteristics of Traditional Knowledge. Addressing the complex challenges associated with preserving Indigenous Knowledge requires collaborative efforts among indigenous communities, governments, international organizations, and researchers. The goal is to promote policies and practices that respect the rights of indigenous peoples, protect their cultural heritage, and ensure the sustainable use of their knowledge for the benefit of all. Traditional knowledge is essential for conserving indigenous history, ensuring equitable compensation, and promoting long-term economic opportunities for traditional communities. Preserving this knowledge helps maintain cultural diversity and promotes community empowerment. Indigenous Knowledge offers significant contributions to cultural diversity by providing unique perspectives that enrich our understanding of human-nature relationships. It also promotes environmental sustainability through traditional practices that have evolved over centuries of close interaction with the environment.

The integration of Indigenous Knowledge into global strategies for sustainability and conservation offers a path toward more resilient and adaptive solutions to environmental challenges. Efforts must be made to integrate indigenous knowledge into legal systems in a way that respects its unique characteristics, ensuring that its use contributes to national economic development and improves the social conditions of indigenous users. The enforcement of Intellectual Property Rights requires the identification, isolation, and protection of information, which contrasts with the holistic nature of Traditional Knowledge that encompasses much more. It is also crucial that these partnerships are built on principles of respect, equity, and informed consent, ensuring that indigenous communities remain at the forefront of decision-making processes.

The limitations inherent in indigenous knowledge systems should be acknowledged when integrating them into formal systems. Governments need to develop strategies to support community-based education that revitalizes indigenous education in both local and global context. Indigenous sciences and sustainability practitioners need to engage in future dialogues that incorporate indigenous protocols. The integration of indigenous knowledge into educational curricula is crucial for fostering an appreciation of cultural heritage and promoting sustainable development. It is essential that future policies and practices are developed and implemented in close collaboration with Indigenous Knowledge holders, ensuring that their voices are heard and their rights are respected.

The objective of the study is found out the interplay between Indigenous Knowledge (IK) systems and contemporary Intellectual Property Rights (IPR) frameworks and advocate for the better sui generis legal approach that harmonizes customary laws with formal IPR systems to ensure equitable benefit-sharing with preservation of indigenous heritage. The methodology adopted here is the Doctrinal methodology and data is collected and analysed from the secondary sources from different Books, Journals and Online Sources.

2. INTELLECTUAL PROPERTY RIGHTS: AN ODDITY FOR INDIGENOUS KNOWLEDGE

Traditional Intellectual Property Rights would encourage the preservation of traditional knowledge. However, intellectual property as 'property' provides a legal framework for enforcement. The current intellectual property rights regime does not adequately protect intangible cultural heritage. Current intellectual property rules need extensive restructuring. The limitations of Patent Laws like novelty, inventiveness, and originality are difficult to apply to Indigenous Knowledge due to its long-standing existence and communal origin. In Copyright Challenges the requirement for originality and fixation in a tangible medium can exclude many forms of Indigenous Knowledge that

are transmitted orally or are part of the communal domain. And in Trademark Laws, the inadequacies in protecting collective authorship and traditional symbols. Turmeric and Neem Patents cases are instances which underscore the importance of addressing the power imbalances in the global intellectual property system and promoting legal and policy reforms that prioritize the rights and interests of indigenous communities.

3. BIOPIRACY AND CULTURAL APPROPRIATION: A THREAT TO INDIGENOUS KNOWLEDGE

Biopiracy is unauthorized extraction and commercialization of IK without fair compensation. It is the practice of patenting biological resources and Traditional Knowledge without the consent of indigenous communities or providing equitable benefits. Some instances of Biopiracy are Neem, Turmeric, and Ayahuasca cases, raising awareness about the exploitation of indigenous resources. Several high-profile cases of biopiracy have highlighted the vulnerability of Traditional Knowledge to exploitation by commercial interests.

Cultural Appropriation is Misuse of traditional symbols, motifs, or knowledge without proper understanding, respect, acknowledgement or even without permission for economic gain. Addressing the harmful effects of cultural appropriation on indigenous identity and cultural heritage. Cultural appropriation can manifest in various forms, ranging from the use of traditional designs in fashion to the commercialization of indigenous spiritual practices. This highlights ethical considerations related to the commercial use of cultural symbols and knowledge.

Biopiracy and Cultural Appropriation impacts on Indigenous Communities like loss of biodiversity, erosion of cultural identity, and economic disadvantages. These also have legal and ethical implications on indigenous communities. Absence of robust mechanisms, the existing intellectual property laws are inadequate to protect Indigenous Knowledge due to its unique characteristics and communal nature. To address this power imbalances there is need for benefit-sharing mechanisms and stout intellectual property rights laws for protecting traditional knowledge is essential in order to promote justice and equity.

4. INTERNATIONAL LEGAL FRAMEWORKS

There are many International Legal Frameworks which emphasises on equitable sharing of benefits like CBD, Nagoya Protocol, TRIPS Agreement, WIPO, UNDRIP etc. Convention on Biological Diversity (CBD) gives emphasis on fair and equitable sharing of benefits arising from the utilization of genetic resources. Nagoya Protocol outlines procedures for access to genetic resources and associated traditional knowledge with prior informed consent. TRIPS Agreement examines the provisions related to intellectual property rights and their impact on indigenous knowledge. WIPO highlights the organization's work in promoting the protection of Traditional Knowledge through various initiatives and forums. The Declaration on the Rights of Indigenous Peoples advocates for the recognition and protection of Indigenous Knowledge and cultural heritage.

Convention on Biological Diversity (CBD): The Convention on Biological Diversity, adopted in 1992, is a key international framework for the conservation of biological diversity. The CBD recognizes the sovereign rights of states over their natural resources and promotes fair and equitable sharing of benefits arising from the utilization of genetic resources. It further acknowledges the critical role of Indigenous knowledge, innovations, and practices in biodiversity conservation and sustainable use, advocating for their protection and promotion with the approval and involvement of the knowledge holders. However, challenges persist in the practical implementation of these provisions, particularly concerning the effective involvement of Indigenous Peoples in decision-making processes and the establishment of robust benefit-sharing mechanisms. The Convention on Biological Diversity has significantly influenced the debate surrounding intellectual property rights

and traditional knowledge, particularly concerning biopiracy and the equitable distribution of benefits from genetic resources.

Nagoya Protocol: The Nagoya Protocol builds upon the CBD by providing a more detailed framework for access to genetic resources and equitable sharing of benefits. Specifically, it mandates that benefits arising from the utilization of traditional knowledge associated with genetic resources are shared in a fair and equitable manner, through mutually agreed terms established with Indigenous and local communities. Despite these international instruments, significant challenges persist in implementation, particularly concerning the effective protection of traditional knowledge from misappropriation and ensuring equitable benefit-sharing.

TRIPS agreement: The TRIPS agreement, while setting minimum standards for intellectual property protection, also has provisions affecting Traditional Knowledge, particularly in patents, geographical indications, and undisclosed confidential information. The globalization of Intellectual Property Rights through international conventions has complicated conflict of interest. These frameworks often prioritize corporate innovations over communal traditional knowledge systems, creating discrepancies in protection and benefit-sharing. This often necessitates a sui generis legal framework to recognize the unique nature of traditional knowledge and ensure its effective preservation and economic strengthening for indigenous communities. Furthermore, several nations, such as Ecuador and Chile, have proactively incorporated customary law into their national frameworks to protect Traditional Knowledge, emphasizing collective rights and prior informed consent. The World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights, initially conceived as an expansion of the CBD, aimed to clarify minimum standards for regulating intellectual property rights among member states but has been criticized for its inadequacy in protecting traditional knowledge. This inadequacy stems from TRIPS' focus on individual and corporate intellectual property, which often conflicts with the communal and intergenerational nature of traditional knowledge. This oversight often leads to the misappropriation of indigenous knowledge by external entities, hindering the ability of traditional knowledge holders to benefit from their ancestral heritage and perpetuating economic disparity. Indeed, the TRIPS agreement's commodification of knowledge as private property, alongside the rise of the Information Age, has further exacerbated the vulnerability of traditional knowledge systems to appropriation. The prevailing international Intellectual Property Rights regime, largely governed by agreements like TRIPS, frequently treats genetic components and modified organisms as commodities, thereby facilitating their private ownership and commercialization, even when derived from traditional knowledge with minimal alterations. This approach often clashes with the customary rules governing traditional knowledge, which typically do not commodify knowledge or focus on exclusive rights.

World Intellectual Property Organization: The World Intellectual Property Organization plays a crucial role in promoting the protection of Traditional Knowledge through various initiatives. WIPO's Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore has been actively exploring ways to provide effective protection for TK, including through the development of international legal instruments. These efforts include examining how existing intellectual property systems can be leveraged more creatively to protect traditional knowledge, and also considering sui generis systems tailored to the specific characteristics of TK. Such sui generis systems are often recommended as traditional knowledge is largely uncommodifiable, making its protection through conventional Intellectual Property Rights within organizations like WIPO and WTO challenging. Moreover, WIPO is actively involved in facilitating a diplomatic conference in May 2024 to potentially forge a new legal instrument aimed at preventing patents from misappropriating traditional knowledge and associated genetic resources, marking a significant step towards a binding protective framework. This initiative aims to address the long-

standing gaps in international intellectual property law that have allowed for the exploitation of indigenous innovations without appropriate recognition or compensation.

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP): This is a comprehensive 2007 international instrument establishing minimum standards for the survival, dignity, and well-being of Indigenous peoples worldwide. It covers collective and individual rights to culture, education, health, land, and self-determination. It emphasizes the importance of safeguarding Indigenous Knowledge as part of cultural heritage. It further asserts the rights of indigenous peoples to maintain, control, protect, and develop their traditional knowledge, reinforcing the need for legal frameworks that recognize and uphold these collective rights. Furthermore, ongoing scholarly discourse frequently scrutinizes how international law and domestic policy measures approach and operationalize indigenous traditional knowledge provisions, often highlighting the problematic nature of applying Western intellectual property frameworks to collectively created and intergenerationally transmitted knowledge. The World Intellectual Property Organization defines traditional knowledge as "knowledge, know-how, skills, and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity". However, this broad definition often clashes with the rigid criteria of conventional intellectual property rights, necessitating tailored protection mechanisms that acknowledge its unique characteristics. Despite these definitional complexities, the imperative to protect traditional knowledge stems from concerns regarding equity, conservation, the preservation of cultural practices, and the prevention of unauthorized appropriation.

Challenges in Implementation: One primary difficulty arises from the disparities between national legal systems and the diverse forms of traditional knowledge, making uniform enforcement challenging. Furthermore, the inherently communal and intergenerational nature of much indigenous knowledge often presents a poor fit for intellectual property regimes primarily designed to protect individual and corporate proprietary interests. These challenges are further exacerbated by the lack of universally accepted definitions for traditional knowledge, indigenous peoples, and indigenous knowledge, leading to confusion and inconsistencies in international discussions and national implementations. The absence of an internationally recognized definition for traditional knowledge, outside of what fits into commonly recognized Intellectual Property Rights, further complicates effective protection measures. This definitional ambiguity often hinders the development of robust legal frameworks, as evidenced by scholarly debates questioning whether traditional knowledge truly constitutes "knowledge" in the Western epistemological sense, or if it encompasses broader ideas, attitudes, and practices that defy conventional intellectual property classifications.

The United Nations Declaration on the Rights of Indigenous Peoples sets minimum standards for the preservation and sustenance of the indigenous people and their traditional knowledge. This framework underscores the necessity of obtaining free, prior, and informed consent from indigenous communities before any utilization of their traditional knowledge, reinforcing their self-determination and cultural integrity. Article 31 of the UN Declaration explicitly affirms the right of Indigenous Peoples to maintain, control, protect, and develop their intellectual property, linking this directly to the exercise of free, prior, and informed consent in relation to their knowledge systems. This emphasizes the right to self-determination, including self-government and legal systems for Indigenous Peoples. Moreover, it acknowledges that traditional knowledge, though often orally transmitted and communally owned, still warrants protection against misappropriation, echoing the global shift towards recognizing the unique legal needs of indigenous communities. This includes the need for specialized intellectual property frameworks that accommodate the collective ownership and intergenerational transfer inherent in many traditional knowledge systems.

Recent developments mandating disclosure of origin in patent applications. Recent efforts to amend the TRIPS agreement to include the disclosure of origin of biological resources aim to

ensure the agreement supports the objectives of the CBD. India has opposed the grant of patents relating to traditional knowledge, for example, turmeric, basmati rice and neem. The need for harmonization of TRIPS with the CBD is necessary for preventing patents based on genetic material and Traditional Knowledge that has been misappropriated.

5. NATIONAL APPROACHES TO PROTECTING INDIGENOUS KNOWLEDGE

India's Initiatives in establishment of the Traditional Knowledge Digital Library, the enactment of the Biological Diversity Act in 2002, Protection of Plant Varieties and Farmers' Rights Act, 2001 and the Patent Amendment Act of 2002 show India's commitment to protecting Traditional Knowledge. India has made considerable progress in using legal systems to protect Traditional Knowledge. Furthermore, the Indian Biological Diversity Act mandates prior approval from the National Biodiversity Authority for accessing biological resources and associated traditional knowledge for commercial utilization, ensuring equitable benefit-sharing with local communities.

Biological Diversity Act, 2002: The Biological Diversity Act, 2002, protects Indigenous Knowledge by regulating access to India's biological resources, ensuring equitable benefit-sharing with local communities, and preventing unauthorized intellectual property rights. It mandates the creation of People's Biodiversity Registers (PBRs) by local Biodiversity Management Committees (BMCs) to document and safeguard this knowledge. The act operates through the NBA (national), State Biodiversity Boards (SBBs), and local BMCs to govern, manage, and protect biodiversity. The Act restricts foreign and domestic entities from obtaining Intellectual Property Rights (IPRs) on inventions based on research of Indian biological resources or associated TK without prior approval. The Act ensures that commercial utilization of traditional knowledge requires approval from the National Biodiversity Authority (NBA), ensuring benefits are shared with the holders of such knowledge. Traditional uses, local healers (vaidis and hakims), and common trade of biological resources are generally exempted, allowing communities to continue their traditional practices.

TKDL: The TKDL, initiated two decades ago, effectively upholds Indian patent law by prohibiting patents on traditional knowledge already in the public domain and has been instrumental in India's fight against biopiracy, notably in cases involving Neem and Turmeric. Such defensive protection mechanisms, exemplified by the TKDL, serve to prevent the unjust appropriation of indigenous knowledge, thereby safeguarding cultural heritage and economic interests. These initiatives underscore India's commitment to protecting its traditional knowledge from exploitation and ensuring that the benefits derived from these resources are shared equitably with the originating communities. These efforts also include the proposed Traditional Knowledge Register of India, which aims to further consolidate and document traditional knowledge resources to prevent their misappropriation and ensure proper acknowledgment and benefit-sharing. Despite these robust legal and digital frameworks, implementation challenges persist, particularly in ensuring equitable benefit sharing and addressing the complexities of community rights, which are often not vested in individuals but in collective entities. Indeed, the concept of collective ownership within indigenous communities frequently conflicts with conventional intellectual property frameworks, which typically emphasize individual proprietorship and commercialization, often leading to instances of biopiracy where traditional knowledge is exploited without proper consent or benefit-sharing. Further complicating matters, enforcement remains a significant challenge, as many traditional arts, though protected by Indian laws, suffer from weak oversight, and local artisans often lack the necessary resources to pursue legal battles against infringements. The registration process for intellectual property can be time-consuming and resource-intensive, making it difficult for small-scale producers to protect their traditional knowledge. Additionally, the undocumented nature of much traditional knowledge makes it particularly vulnerable to exploitation by commercial entities, highlighting the critical need for comprehensive documentation and effective legal safeguards to

prevent biopiracy and ensure equitable benefit-sharing with indigenous communities. The Traditional Knowledge Digital Library in India, for example, plays a crucial role in preventing biopiracy by documenting traditional medicinal knowledge and making it accessible to patent examiners. The ongoing global discourse, particularly at the World Intellectual Property Organization, aims to establish an international legal framework to safeguard Traditional Cultural Expressions and prevent their misappropriation, thereby complementing national efforts like India's TKDL. This highlights the tension between conventional intellectual property rights, which often focus on individual ownership, and the collective nature of much traditional knowledge.

Sui Generis Systems: These systems are crucial for addressing the limitations of conventional intellectual property frameworks, which often fail to recognize the communal, intergenerational, and holistic nature of Indigenous Knowledge. Such specialized systems recognize the intangible aspects of traditional knowledge, including oral traditions and communal ownership, which are often overlooked by conventional intellectual property regimes. India's focus on developing sui generis systems, like the Biological Diversity Act, aims to provide flexible mechanisms aligned with the collective and dynamic nature of Traditional Knowledge, fostering protection against misappropriation and promoting fair economic benefits for communities. This proactive approach is essential given that the global intellectual property rights system frequently fails to adequately protect Traditional Knowledge, often leading to its appropriation by commercial entities for private gain. Consequently, several nations and international bodies advocate for specialized legal frameworks to acknowledge and protect traditional knowledge as a distinct category of intellectual property. This bespoke legal approach, often referred to as a sui generis framework, is widely considered the most effective means to grant proprietary rights to traditional knowledge holders and ensure equitable market operation. This becomes particularly vital for countries like India, where marginalized tribal communities, comprising approximately 10% of the population, possess invaluable ancestral knowledge that is integral to their identity and survival, yet often vulnerable to exploitation due to its collective and orally transmitted nature.

Documentation and Preservation: These initiatives are crucial for safeguarding intellectual property and ensuring the continued vitality of cultural heritage, as they provide a systematic approach to archiving and disseminating knowledge that might otherwise be lost or exploited. Blockchain technology, for instance, offers a transparent and immutable ledger to record the origins and ownership of traditional knowledge, enhancing accountability and preventing unauthorized commercialization. Such digital repositories, including India's Traditional Knowledge Digital Library, play a vital role in protecting traditional medicinal knowledge by making it accessible to patent examiners, thereby preventing biopiracy and promoting equitable benefit-sharing. The World Intellectual Property Organization is actively working towards establishing a new legal instrument to prevent the misappropriation of traditional knowledge and associated genetic resources, reflecting a global recognition of the need for stronger, binding protections. Despite calls for a sui generis system for Traditional Knowledge protection, the diverse nature of TK, encompassing various forms from medicinal practices to artistic expressions, presents challenges for a unified approach. Therefore, a multi-faceted strategy incorporating both existing intellectual property mechanisms and specialized legal frameworks is often required to address the intricate nuances of traditional knowledge protection effectively. Developing comprehensive national networking systems for centralized documentation of Local Health Traditions can further ensure *ex situ* protection of the intellectual property rights for traditional healers and communities.

6. RECOMMENDATIONS FOR EFFECTIVE PROTECTION OF INDIGENOUS KNOWLEDGE

The protection of indigenous knowledge is an evolving field, necessitating constant adaptation of legal and policy frameworks, through legal reforms and by capacity building training to indigenous community and it also can address the challenges posed by technological advancements and globalization.

Policy Measures: Establishing legal frameworks that recognize collective ownership and traditional governance structures is crucial for safeguarding indigenous knowledge from misappropriation, as traditional intellectual property regimes often fail to address the communal and dynamic nature of such knowledge. Moreover, these frameworks should incorporate mechanisms for prior informed consent and equitable benefit-sharing, acknowledging the distinct cultural values associated with indigenous knowledge and ensuring that communities are empowered to determine its use and dissemination. This integrated approach would facilitate the establishment of a robust defence against biopiracy and ensure the long-term sustainability and vitality of indigenous knowledge systems. Furthermore, it is imperative to enact specific legislation that not only recognizes traditional knowledge but also delineates the rights of practitioners and establishes regulatory frameworks for benefit-sharing to prevent future issues of biopiracy. Such legal and policy interventions must address the historical power imbalances and inequities inherent in the relationship between Indigenous communities and external entities seeking to utilize their traditional knowledge, which conventional intellectual property laws often fail to do. Therefore, governments should consider sui generis systems, such as community intellectual property rights, to address the unique collective ownership and cultural significance of traditional knowledge. These systems offer a more appropriate legal framework by acknowledging the communal nature of ownership and the intergenerational transmission of knowledge, thereby contrasting with the individualistic and time-limited protection offered by conventional intellectual property rights.

Legal Reforms: Legal reforms are essential to overcome the limitations of existing intellectual property laws, which often fail to provide adequate protection for Indigenous Knowledge due to their emphasis on individual or corporate ownership rather than communal rights. These systems require clear definitions, objectives, identification of subject matter, legality of material, registrations, exceptions, limitations, and duration of protection to be legitimately enforceable. Furthermore, such frameworks must be continually evaluated for systematic biases and barriers to participation by Indigenous communities, and sufficient expertise must be provided to these communities to ensure fair and effective engagement in negotiation processes. Beyond national legal frameworks, community protocols have emerged as critical instruments for local communities to assert their rights and codify their traditional practices, institutions, and visions for development within the broader international legal landscape. Moreover, specialized intellectual property rights, tailored to the unique attributes of indigenous knowledge, are crucial for ensuring that these systems of knowledge are respected and protected against unauthorized commercial exploitation. Indeed, the development of sui generis systems, like those implemented in India, offers flexible protection mechanisms that align with the collective and dynamic characteristics of traditional knowledge, providing a robust defence against misappropriation and ensuring equitable economic benefits for indigenous communities. These systems can bridge the gap between traditional knowledge systems and modern legal frameworks, recognizing indigenous populations as equal partners in collaborative research and innovation while also promoting equitable collaborations and protecting intellectual property. This approach is particularly critical in nations like India, where the immense cultural diversity and wealth of traditional knowledge are insufficiently protected by existing legislative frameworks. Such an approach would integrate the ethos of indigenous communities into various disciplines, fostering a

balanced and inclusive development that aligns with global sustainability goals. The establishment of comprehensive databases for traditional knowledge, as seen in India's Traditional Knowledge Digital Library, can further enhance protection by documenting and making this knowledge accessible while simultaneously preventing its illegitimate appropriation by external entities. However, the mere existence of databases is insufficient; robust legal enforcement mechanisms are also necessary to prosecute misappropriation and ensure compensatory justice for indigenous communities. This comprehensive approach, integrating sui generis legal frameworks with documented traditional knowledge, offers a multifaceted strategy to safeguard indigenous intellectual property rights and promote equitable benefit-sharing.

Capacity Building: Educating indigenous communities about their rights, providing legal and technical support for documenting IK. Empowering Indigenous communities through such initiatives enables them to actively participate in the development and implementation of protection mechanisms, fostering self-determination and the sustainable management of their knowledge systems. This includes ensuring that intellectual property systems are flexible enough to accommodate the unique characteristics of traditional knowledge, which often involves collective ownership and intergenerational transfer. Moreover, legal frameworks should incorporate mechanisms for benefit sharing and equitable compensation to indigenous communities when their traditional knowledge is utilized for commercial purposes, ensuring that their contributions are appropriately acknowledged and rewarded. Furthermore, capacity building within these communities should encompass training in intellectual property law, negotiation skills, and documentation techniques to empower them as active agents in protecting their heritage. This empowerment is critical for enabling indigenous groups to engage effectively with external actors and navigate the complexities of national and international legal systems. Such initiatives are vital for bridging the gap between traditional knowledge systems and contemporary intellectual property frameworks, fostering an environment where indigenous innovations are recognized and respected. Ongoing training programs are also vital for raising awareness among diverse stakeholders regarding the capture, documentation, and sharing of Indigenous Knowledge, thereby facilitating its integration into policy and fostering knowledge exchange among communities and policymakers.

7. CONCLUSION

Indigenous Knowledge of communities have historically contributed to global well-being through their knowledge systems, providing sustenance, medicine, and sustainable resource management practices that remain highly relevant in addressing contemporary global challenges like climate change and biodiversity loss. This acknowledgment underscores the multifaceted utility of Indigenous ecological knowledge, not only as a reservoir of information but as a conduit for fostering resilience and promoting just governance in the management of natural resources. Hence, it is critical to acknowledge that integrating Indigenous Traditional Ecological Knowledge must be done respectfully, benefit all Indigenous communities, and be led by these communities themselves. By recognizing the unique characteristics of IK and integrating customary laws with formal legal mechanisms, it is possible to safeguard indigenous heritage against misappropriation and ensure equitable benefit-sharing. Such an approach not only preserves cultural diversity but also contributes to global sustainability and social justice. This paradigm shift demands a re-evaluation of Western-centric intellectual property models, which often fail to account for the communal ownership and intergenerational transmission inherent in indigenous knowledge systems. Therefore, a holistic, principle-based approach is imperative, respecting indigenous rights and traditions while integrating their knowledge into sustainable development and cultural preservation efforts. This entails establishing national and international regulatory frameworks that are culturally sensitive and allow for the legal and ethical use of hereditary resources and conventional proficiency within the

intellectual property system. This also necessitates robust mechanisms for benefit-sharing that are developed in collaboration with indigenous groups, ensuring that any commercialization of their knowledge provides equitable economic returns and respects their cultural heritage. Such frameworks should also address power imbalances and ensure that Indigenous Peoples and local communities are sufficiently supported with time and resources to influence decisions and effectively participate in policy uptake initiatives, recognizing their essential role in setting realistic and effective biodiversity targets. This necessitates a shift from merely consulting Indigenous communities to actively co-producing knowledge and policy alongside them, thereby recognizing their epistemologies as foundational rather than supplementary. Conversely, the intellectual property rights regime has historically catered to profit-making institutions and individuals, particularly after the establishment of global organizations like WIPO, emphasizing exclusive rights over intellectual property. This historical trajectory presents a fundamental conflict with the collective ownership and intergenerational transmission inherent in traditional knowledge systems.

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