
REIMAGINING INTELLECTUAL PROPERTY FOR TRADITIONAL KNOWLEDGE AND INDIGENOUS INNOVATION: A DECADAL ANALYSIS OF INDIA

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ABSTRACT

This research examines the role of intellectual property law in protecting traditional knowledge and indigenous innovation in India during the period 2016–2026. It argues that while intellectual property regimes have contributed to preventing misappropriation and enabling limited recognition of community-based knowledge systems, they remain structurally inadequate in addressing the collective, evolving, and context-specific nature of traditional knowledge. The study adopts a doctrinal methodology, supported by institutional data and policy developments, to analyse the functioning of key legal frameworks, including patents, geographical indications, biodiversity regulation, and farmers' rights.

The findings indicate that India has developed a layered and pragmatic approach, combining defensive mechanisms such as the Traditional Knowledge Digital Library with positive recognition through geographical indications and distributive tools like access and benefitsharing. However, this framework remains fragmented and uneven in its impact. Significant challenges persist in the form of weak enforcement, asymmetrical benefit distribution, vulnerability of non-codified knowledge, and emerging risks posed by digital technologies and artificial intelligence.

The research concludes that intellectual property law alone cannot provide comprehensive protection for traditional knowledge. Instead, a multi-layered and community-centered approach is required, integrating legal reforms, institutional strengthening, and international cooperation. It further recommends the development of a sui generis framework that recognizes the unique characteristics of traditional knowledge while ensuring equitable benefit-sharing and community participation. Ultimately, the study emphasizes the need to reframe traditional knowledge not merely as an economic resource, but as a vital component of cultural heritage and sustainable development.

Keywords: Traditional Knowledge, Indigenous Innovation, Intellectual Property Law, Geographical Indications, Biodiversity, Benefit-Sharing

CHAPTER 1

INTRODUCTION AND RESEARCH FRAMEWORK

1.1 Background and Context

The intersection between intellectual property law and traditional knowledge has emerged as one of the most complex and contested areas in contemporary legal discourse. The two knowledge systems which exist within this conflict create a basic dispute which remains unresolved. The system of intellectual property rights requires individual authorship together with new and original creations which must receive official recognition. The system of traditional knowledge functions as a communal body of knowledge which develops through time within cultural groups that share their traditions through spoken word. The different systems create fundamental structural problems which prevent standard intellectual property systems from properly safeguarding traditional knowledge and indigenous creative works.¹

The tension in India acquires special importance because the nation possesses extensive cultural diversity and its people maintain traditional practices. The indigenous communities in different regions have built advanced knowledge systems through their development of agricultural and medicinal and biodiversity and craft and ecological management systems. The knowledge systems exist as living traditions that continue to evolve because environmental changes and social developments create new conditions. The informal nature of these systems makes them vulnerable to misappropriation and unauthorized commercialization and they face extinction because of global market dynamics.²

The issue gained international prominence through a series of controversies involving the patenting of traditionally known substances and practices. The cases about turmeric neem and basmati rice showed how foreign patent systems treated traditional community knowledge as new inventions because there was no existing prior art documentation. The existing intellectual property systems failed to handle traditional knowledge and required a new approach to legal solutions and needed both national and international legal systems to be reevaluated.³

¹ World Intellectual Property Organization, *Traditional Knowledge and Intellectual Property: Background Brief*(WIPO 2023).

² Biological Diversity Act, No. 18 of 2003, INDIA CODE (2003).

³ Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (South End Press 1997).

India has implemented various legislative and institutional and policy measures during the last ten years to tackle these challenges. The Traditional Knowledge Digital Library (TKDL) project and the Geographical Indications program expansion and the improved biodiversity regulations and the ongoing development of the Protection of Plant Varieties and Farmers' Rights system show a comprehensive method for protecting traditional knowledge. The 2024 treaty adopted by the World Intellectual Property Organization demonstrates an international trend towards recognizing traditional knowledge as essential for global intellectual property management.⁴

The current status of intellectual property laws needs to be evaluated to determine their effectiveness for communities who protect traditional knowledge. Intellectual property tools showed some success in preventing unauthorized use of origin-based products. The system needs to distribute benefits fairly while giving communities authority and maintaining sustainability for the long term. The present challenge requires two solutions because legal protection needs to be combined with systems that protect collective heritage knowledge.

1.2 Statement of the Problem

The main problem discussed in this study pertains to the inefficiency of a single legal framework in effectively protecting traditional knowledge and innovation developed by indigenous communities. Despite the presence of a rich portfolio of laws related to intellectual property, geographical indications, biodiversity, and farmers' rights, all of which exist separately and cannot be considered an interconnected network of regulations. This gap undermines the effectiveness of legal instruments since they are incapable of ensuring equal protection, enforcement, and fair benefit distribution for traditional knowledge-based products.

One of the problems inherent in the present situation includes the inconsistency between the nature of traditional knowledge and the principles underlying intellectual property law. Traditional knowledge usually refers to non-attributable ideas that evolve continuously and are not documented. Intellectual property law requires clear ownership and novel expression that can be protected using copyrights and trademarks. Therefore, certain categories of traditional knowledge cannot be adequately protected by any available legal means.

⁴ World Intellectual Property Organization, *WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge* (2024).

Another aspect to consider is the imbalance between the parties to the transaction. The indigenous community holds ownership over traditional knowledge, yet it is unable to negotiate a deal on its own behalf. Consequently, companies, traders, and license holders benefit from exploiting traditional knowledge without paying the corresponding fees. As a result, the majority of profits are accumulated by those who do not possess exclusive rights to innovative ideas.

The emergence of advanced technologies also poses an additional threat since it allows for collecting, storing, and analyzing traditional knowledge on a massive scale without consulting representatives of communities from which this knowledge originated. Hence, it is pertinent to investigate whether the existing legal frameworks will be sufficient to regulate the process of developing and utilizing traditional knowledge in the future.

Overall, the problem does not relate to the availability of laws designed to protect traditional knowledge. It pertains to their ineffectiveness due to various inconsistencies and gaps in regulation, such as the inability to cover all aspects of traditional knowledge and guarantee equal access to legal resources for all parties involved.

1.3 Research Objectives

The first main objective of the research will be to conduct a critical evaluation of the impact and effectiveness of intellectual property law in protecting traditional knowledge and innovations in India between 2016-2026. The focus will be on moving past description towards a more thorough analysis of how well the relevant legal instruments have served their purposes.

One of the main objectives will be to conceptualize and understand the relationships and connections between traditional knowledge and intellectual property systems. This includes defining and explaining the commonalities as well as contradictions that can be identified and used to make predictions about future developments.

Additionally, the analysis will focus on determining whether the existing legal instruments, such as patents, geographical indicators, and biodiversity laws, are effectively used for prevention of misappropriation and for fostering recognition of community-based knowledge.

In addition to determining the efficiency of intellectual property laws in preventing misappropriation and recognizing traditional knowledge, one other goal will be to examine

whether these laws contribute to the equitable distribution of benefits among the owners of knowledge.

It will be necessary to determine whether there are any shortcomings or gaps in the current framework for knowledge protection and what steps could be taken to improve the situation. Of particular interest will be the problem of non-codified knowledge and of misappropriation facilitated by modern digital technology.

Finally, based on the conducted analysis, it will be possible to develop recommendations for future action and come up with a more comprehensive and efficient strategy for protecting traditional knowledge.

1.4 Research Questions and Hypotheses

There are several research questions and hypotheses that the current investigation will rely on. First and foremost, there is a question of whether intellectual property frameworks can serve as a useful tool for protecting traditional knowledge and innovations. This is the central hypothesis that will inform all other aspects of the research.

Other questions focus on evaluating the extent to which existing legal instruments prevent misuse of traditional knowledge, foster recognition, and provide for equitable benefit distribution among the communities.

1.5 Research Methodology

Research for this study uses a doctrinal research approach which examines legal texts and judicial decisions and policy documents and institutional reports. The research examines key statutes which include the Patents Act 1970 and the Geographical Indications of Goods Registration and Protection Act 1999 and the Biological Diversity Act 2002 as amended in 2023 and the Protection of Plant Varieties and Farmers Rights Act 2001. The implementation of traditional knowledge systems is examined through case law and administrative practices and relevant rules which govern their use.

The research uses publicly available data for its empirical research while conducting doctrinal analysis. The research includes statistical data which shows geographical indication registration numbers and patent opposition cases and biodiversity approval processes and the

institutional projects of TKDL and National Innovation Foundation. The data becomes a tool for establishing legal developments which allow researchers to evaluate their actual effects.

The study compares different elements to international developments which require this method of analysis. The study analyzes instruments which include the Convention on

Biological Diversity and the recent treaty developments of the World Intellectual Property Organization to show how India implements its global approach.⁵ On the other hand, comparative aspects remain underexplored due to their limited relevance to the research questions posed.

1.6 Scope and Limitations

This research covers the legal and institutional instruments regulating traditional knowledge and indigenous innovation protection in India. Even though international experience will be discussed, the emphasis will still be placed on the domestic situation in the country and the recent legal evolution. No anthropological and sociological analysis of traditional knowledge systems and coverage of all sectors involved will be undertaken.

A number of limitations are associated with the research scope. One of the major obstacles relates to the absence of adequate data concerning the economic and social effects of various traditional knowledge protection mechanisms. Though the available statistics and institutional documents allow understanding the scale of these processes and provide valuable insights, these measures are inadequate.

Furthermore, one must take into account the inherently dynamic nature of both the phenomenon being studied and the legislation regulating it. On the one hand, traditional knowledge evolves all the time, on the other, legal and policy frameworks continue to evolve depending on the development of new trends. That means that the results of this research are only valid for a certain point in time and may be outdated in the future.

Finally, this limitation stems from the use of the available literature and public sources as data bases. While they may provide useful information, the absence of first-hand accounts from

⁵ Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

representatives of communities whose rights should be protected is a clear limitation.

1.7 Chapterisation

There are six chapters in total in this research, each of which is dedicated to a particular facet of the issue under discussion. At present, this paper serves as an introduction that outlines the research problem, objectives, background, method and scope.

The next chapter is devoted to conceptual issues of traditional knowledge and their protection through intellectual property. In particular, the definitions, theoretical frameworks and limits of conventional methods will be considered.

Chapter three will discuss the development of Indian legal and institutional frameworks within the past decade in relation to traditional knowledge.

In chapter four, specific intellectual property mechanisms will be discussed from doctrinal perspective. Their advantages and disadvantages will be evaluated in terms of their applicability to this case.

In turn, challenges and risks inherent in the contemporary reality will be examined in chapter five.

Finally, the last chapter of this research includes concluding remarks and recommendations for reform.

CHAPTER 2: CONCEPTUAL FRAMEWORK – TRADITIONAL KNOWLEDGE VS INTELLECTUAL PROPERTY

2.1 Understanding Traditional Knowledge: Meaning and Characteristics

The legal framework and conceptual framework of traditional knowledge established two restricted definitions which fail to encompass its actual meaning. The system represents more than an informational collection because it comprises multiple practices together with their associated skills and cultural innovations which communities have developed through time and continue to pass on to others. The social and ecological and cultural settings of traditional knowledge systems protect their dynamic nature which enables them to adapt to different

situations.⁶

The concept of traditional knowledge includes various spheres, including medicine, agriculture, biodiversity conservation, craftsmanship, and ecological management. Traditional knowledge in India is exemplified by the Ayurveda, Siddha, and Unani medicine systems; the local practice of storing seeds and managing waters and crafts. Moreover, the latter should be considered living systems that change continuously with the help of collective experimentation and adaptation to new conditions.

There are several important features of traditional knowledge that have to be taken into account when discussing its legal regulation. First, knowledge of this type is always cumulative, which means that it is the product of work done by different generations during different periods. Thus, the issue of finding the creator becomes problematic since any invention can be associated with an inventor while the creation of traditional knowledge involves a number of creators.

Another important characteristic of traditional knowledge is that it is collected and stored collectively. In many cases, there are no formal rights but only customary rules regulating usage, sharing, and transmission. Moreover, these rules cannot be translated into legal terms, as they are related to different aspects that remain unregulated by law. Thus, the collective nature of traditional knowledge does not fit into the logic of the individualistic orientation of intellectual property law.

Finally, traditional knowledge is often transmitted orally or practically without making records of it. Hence, it is not possible to use it as the basis for proving the ownership and rights to knowledge and inventions. In particular, the lack of records prevents from referring to the knowledge as prior art that might protect people from having their inventions misappropriated by others.⁷

These features suggest the necessity of developing a conceptual framework which would take into account the peculiarities of traditional knowledge and the difference of this knowledge form common intellectual property. Otherwise, the legal system will either ignore the

⁶ World Intellectual Property Organization, *Traditional Knowledge and Intellectual Property: Background Brief*(WIPO 2023).

⁷ The Patents Act, No. 39 of 1970, INDIA CODE (1970).

traditional knowledge or force it into the categories which will not be able to fully characterize it.

2.2 Indigenous Innovations and the Continuum of Knowledge

Traditional knowledge is often viewed as an inherited product which was passed from generation to generation. However, the members of indigenous communities should not be regarded as passive bearers of this kind of knowledge only. Communities are active participants in the development of traditional practices and are constantly improving their existing practices to solve emerging problems. In doing so, people make innovations which can be called indigenous innovation or grassroots creativity.

Indigenous innovation is a concept which is situated in a continuum between tradition and modernity. Indigenous innovation refers to modifications, re-combinations, and improvements of knowledge systems which lead to the creation of new knowledge. Indigenous innovation is usually seen when people try to improve their existing practices. For example, farmers produce new seeds which have better qualities than the old ones, craftsmen develop new designs which use their traditional technology, or healers invent new medicines which help people cope with new health problems. Such innovations can be characterized as novel and useful and, therefore, they can be subject to intellectual property rights.

The problem is that indigenous innovations have to be classified in a legal context. It means that the innovations can be regarded either as a traditional practice which does not need any intellectual property protection or as a novel invention which deserves patent protection. Such a categorization can cause some serious problems because there is a question of attribution, ownership, and benefit-sharing. To solve these problems, Indian institutions established the

National Innovation Foundation which focuses on grassroots innovations.⁸

2.3 Misappropriation, Biopiracy, and the Problem of Unfair Extraction

The legal and policy discussions about traditional knowledge protection have focused on its vulnerability to misappropriation. Misappropriation refers to the unauthorized use, commercialization, or privatization of knowledge that originates within communities, often

⁸ National Innovation Foundation – India, *Annual Report and Innovation Database* (2025).

without acknowledgment or compensation. The practice of biopiracy occurs when people extract biological resources together with traditional knowledge from their original sources. Biopiracy typically involves the extraction of biological materials or knowledge from indigenous communities, followed by their transformation into commercial products or patented inventions. The patenting of turmeric for wound healing and neem-based products demonstrates how traditional knowledge can be reappropriated through formal intellectual property systems. The cases showed that foreign jurisdictions granted exclusive rights to existing knowledge because there was no documented evidence of that knowledge.⁹

However, misappropriation is not limited to patenting only. Misappropriation involves using traditional designs without permission, producing fake geographical indication products, and selling cultural expressions without permission. In many cases, knowledge gets stripped off its culture and environment, packaged, and sold. In addition to depriving communities of their rights, misappropriation presents significant moral questions about the appropriation and exploitation of cultures.

The legal reaction to misappropriation has changed significantly over time. Increasingly, preventive actions are being adopted. These include documentation, disclosure of information, and access and benefits sharing provisions. Although helpful, these approaches only partially address the concerns at hand.

2.4 Intellectual Property System Structure and Protection Challenges

The difficulties surrounding protection of traditional knowledge have much to do with the structure of intellectual property system itself. Intellectual property laws emerged in particular socio-economic and historical contexts to encourage innovations and inventions. Therefore, the laws embody fundamental premises that cannot be easily applied to traditional knowledge.

The most important requirement of patent law is the novelty of the invention. It implies that the invention should not be known or used. Traditionally, knowledge is already known to the communities but it lacks the formalized nature that would make it available to outsiders. The contradiction between the premise of intellectual property and reality of traditional knowledge leaves room for legal protection of something that has long been known.

⁹ Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (South End Press 1997).

Another example is copyright law that requires originality of expression and fixation. Since traditionally, knowledge is transferred orally or through practice, it is unlikely that it will qualify under this approach. Even if some elements of traditional knowledge get expressed in writing or art, copyright protects only the expression, leaving ideas unprotected.

There is no doubt that trademark and geographical indication law can potentially be used to protect traditional knowledge. Both laws link product with origin and reputation of product. However, they provide no protection for knowledge or ideas behind products. Thus, trademark and geographical indication can be seen as supplementary tools that cannot guarantee adequate protection.

As a result, intellectual property law cannot be considered an all-inclusive approach to protecting traditional knowledge. On the one hand, it provides a number of opportunities to promote traditional knowledge. On the other hand, its structure leaves many questions unanswered. It means that intellectual property law needs to be complemented with other legal instruments.

2.5 Legal Pluralism

Legal pluralism is an essential component of the proposed conceptual framework. Knowledge is often managed by customary laws and community norms. They regulate access to knowledge, its uses, dissemination, and transmission. Customary laws and community norms work separately from formal legal order and are not necessarily harmonized with it.

Legal pluralism recognizes multiple normative systems functioning in a given society. When it comes to traditional knowledge, formal legal system should interact with community-based governance. However, the relationship between two systems is far from being smooth. On one hand, it is possible that formal laws override customary laws. On the other hand, traditional laws can fail to respond to new challenges posed by globalization and transnational trade.¹⁰

However, its inclusion also poses several problems, such as the representation of the community, internal heterogeneity within it, and conflict with the statute.

It requires a careful approach that recognizes the importance of legal pluralism without harming

¹⁰ Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

community interests in its process.

2.6 Codified and Non-Codified Knowledge: An Important Distinction

It is vital to distinguish between codified and non-codified knowledge as they may require different strategies of legal protection. Codified knowledge includes documents or texts that contain information about the subject (e.g., classical Ayurveda works) or are created to organize the knowledge base (TKDL). Non-codified knowledge is represented by information that is transmitted orally.

The codified knowledge is comparatively easier to protect with the help of current legal instruments, mainly because of defensive protection methods. Databases of traditional knowledge allow the patent examiner to detect prior art and refuse a patent based on the information provided. This strategy proved to be rather successful in preventing some types of misappropriation, especially related to traditional medicine.

However, there are still some difficulties connected to non-codified knowledge since its undocumented character prevents the identification of the prior art, claims of ownership and subsequent enforcement of rights. Moreover, even attempts at documentation can be regarded as misappropriation and exploitation of traditional knowledge due to lack of consent and violation of its confidentiality.

This highlights the need for protection that is not limited to its documentation.

2.7 Toward a Multi-Layered Approach

Given the complexity of the issue and limitations of the current legal approaches, a multilayered strategy of protection appears to be essential. It implies the application of different types of protection tools which cover different elements of the phenomenon and complement each other.

One type is the defensive protection mechanism intended to prevent misappropriation through identification and recognition of prior art. Another is positive protection which grants rights or recognition to community members to enable them to exercise control and benefit economically from their traditional knowledge.

Moreover, the protection strategy should involve access and benefit-sharing frameworks to regulate the use of biological resources and distribution of the profits received by the user of this knowledge.

Finally, governance mechanisms are needed to facilitate further community participation, improve the community institution, and increase awareness and education. All of them will have to be accompanied by international cooperation, given the transnational character of the discussed issues. New treaty frameworks adopted recently in the WIPO prove this trend to be evident.¹¹

Ultimately, the effectiveness of any framework will depend on its ability to balance multiple objectives, including protection, recognition, equity, and sustainability. This requires not only legal innovation but also a shift in perspective—from viewing traditional knowledge as a resource to be exploited, to recognizing it as a vital component of cultural heritage and community identity.

CHAPTER 3: INDIA'S LEGAL AND INSTITUTIONAL RESPONSE (2016–2026)

3.1 The Decade in Perspective: From Fragmentation to Layered Protection

The decade between 2016 and 2026 represents a significant phase in India's approach to the protection of traditional knowledge and indigenous innovation. The period shows multiple important legal and institutional changes that developed through ongoing progress instead of one complete law being passed. The Indian approach has evolved into a layered framework that combines intellectual property tools with regulatory mechanisms and institutional initiatives and international engagement. The gradual evolution of this process shows that people understand traditional knowledge requires more than one legal solution to handle its complex nature.¹²

While in the previous years there was an emphasis on reactive approaches to the problem, such as challenging invalid patents, the current decade has seen an increasing emphasis on proactive measures aimed at documentation, recognition, and benefit sharing. Establishment and

¹¹ World Intellectual Property Organization, *WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge* (2024)

¹² World Intellectual Property Organization, *Traditional Knowledge and Intellectual Property: Background Brief* (WIPO 2023).

development of databases, geographical indication registrations, greater oversight regarding intellectual property applications using biological resources, and community innovation support all illustrate such a change.

However, this development has not brought about a unified approach and eliminated the fragmentation within the legal system. Different elements of traditional knowledge are regulated by different laws, each having its own goals and procedures, and this fact makes it harder for the community members to access these services. In this respect, the current decade may be called a period of consolidation rather than integration.

3.2 Increase in Geographical Indications: Recognition of Origin-Based Traditional Knowledge

Of all legal instruments applied in India to regulate this phenomenon, Geographical Indication (GI) has experienced the most noticeable changes in the last decade. The number of geographical indications registered in the country has grown significantly, which can be explained by an attempt by Indian lawmakers to acknowledge the origin-based quality, reputation, and characteristics of certain products. Therefore, this development proves the viability of geographical indication protection as the tool to protect certain types of traditional knowledge.

It is important to note that the increase in the number of protected GIs goes along with some important conceptual shifts. In contrast to patents where the novelty and individual nature are the main points to prove, geographical indications pay attention to the collective reputation and a strong connection between the product and the area of its production. Such a concept is more consistent with traditional knowledge, thus justifying its protection via GIs.¹³

However, an increase in the number of GIs highlights certain challenges. It should be noted that registration alone cannot ensure economic empowerment or equal benefit sharing among local communities. In some cases, the economic benefits of the GI scheme are reaped by intermediaries, exporters, or producer groups, but not the small-scale producers or artisans involved in generating knowledge. Furthermore, enforcing GIs in the foreign market

¹³ The Geographical Indications of Goods (Registration and Protection) Act, No. 48 of 1999, INDIA CODE (1999).

environment is not easy.

Nevertheless, despite its limitations, the GI system is considered one of the most successful mechanisms to provide positive recognition of traditional knowledge in the current IP law. Its increasing popularity speaks for both its effectiveness and policy support of territorial protection.

3.3 The Traditional Knowledge Digital Library (TKDL): An Example of Defensive Strategy

The establishment and usage of the Traditional Knowledge Digital Library (TKDL) in India can be seen as one of the greatest breakthroughs in terms of protecting traditional knowledge globally. The TKDL acts as a database translating and structuring knowledge found in classical literature for further use by patent examiners around the world. Thus, it solves a problem inherent to the patent system, the absence of prior art in relation to traditional knowledge.

In the years under analysis, the TKDL was used by India to prevent misappropriation through patent grants. Due to its unique structure, the TKDL helps patent examiners discover the prior art unknown before. As a result, a lot of patent applications for medicinal products based on Indian medicine were withdrawn, rejected, or revised.¹⁴

Significance of the TKDL goes beyond its practical implementation; it is the idea behind it that sets it apart. In essence, it means transitioning from attempts to claim ownership over traditional knowledge and its monopoly to attempts to protect against such claims. This way, it bypasses some of the issues related to attempting to privatize knowledge of the community. Nevertheless, at the same time, it provides a good tool for achieving its preservation goals.

It should be noted that there are certain limitations inherent in the TKDL. Namely, it can work exclusively with codified knowledge, which makes it less applicable in cases where the noncodified knowledge of the community is used. Moreover, although the TKDL can prevent obtaining patents, it will not generate any profits for the owners of the knowledge. However, despite some of these limitations, the TKDL remains widely regarded as a successful precedent for countries implementing defensive measures.

¹⁴ Council of Scientific & Industrial Research, *Traditional Knowledge Digital Library (TKDL) Official Documentation* (2025).

3.4 Biodiversity Law and Access and Benefit-Sharing Mechanisms

In recent years, the relation between biodiversity law and intellectual property has gained importance in India as far as protection of traditional knowledge is concerned. Specifically, the Biological Diversity Act, 2002, together with its further amendments, introduced several important legal provisions concerning control over access to biological resources and benefit sharing in case such resources are exploited.¹⁵

There is evidence of an increase in regulatory oversight on intellectual property applications concerning the use of biological resources within the past decade. The applicants are expected to comply with specific obligations and obtain the required approvals from NBA when seeking patents or any other kind of protection for their innovations. In other words, there is another layer of scrutiny, designed to protect the biological resources and associated knowledge from any unauthorized exploitation.

Access and Benefit Sharing Framework

The access and benefit-sharing (ABS) framework is an important innovation aimed to address the distributive aspect of the problem of traditional knowledge protection. The idea behind this framework is relatively simple – by obliging the users of biological resources to provide certain benefits to local communities, it is possible to avoid the commercialization of the protected knowledge at the expense of its original owners.

While the procedural requirements related to access to biological resources have improved, doubts still exist as to the efficiency of the current framework. For instance, there are doubts as to the distribution of benefits and whether communities can participate in relevant decisionmaking processes. There are also challenges connected with complex regulations and the level of awareness of communities.

Despite these challenges, the incorporation of biodiversity legislation into intellectual property regulations can be viewed as an important step forward, since this development implies the recognition of the interconnection of knowledge, resources, and rights.

¹⁵ Biological Diversity Act, No. 18 of 2003, INDIA CODE (2003).

3.5 Farmers' Rights and the Protection of Agrarian Knowledge

The importance of agrarian knowledge in the protection of Indian TK cannot be overstated. In fact, it is the farmers who played (and play now) a critical role in developing and preserving different plant varieties, utilizing the techniques of selection, breeding, and conserving the seeds. To recognize this contribution of Indian peasants, the Protection of Plant Varieties and Farmers' Rights Act, 2001 was adopted.

The relevance of farmers' rights will increase dramatically during the next decade, as discussions on seed sovereignty, agricultural practices, and the commercialization of plant varieties will dominate public discourse. Thus, it will be critical to protect the legal rights of the farmers to be recognized as legitimate innovators and conservers of biodiversity.

Provisions Related to Farmers' Rights and Benefits

According to the Act, farmers' varieties can be registered, and thus, communities will be entitled to get legal recognition. Moreover, benefit-sharing and compensation should be provided in the event of commercialization of the registered variety based on the information obtained from the farmers. Overall, this provision seems to incorporate the principles of equity and justice into the existing legal framework.

Challenges to Implementing Farmers' Rights

It should be admitted that implementing farmers' rights faces certain challenges, including difficulties with fulfilling relevant procedures, low awareness of the issue, and institutional problems. Nevertheless, the farmers' rights remain one of the most significant aspects of Indian TK protection legislation.

3.6 Institutional Ecosystem: Bridging Knowledge and Law

Apart from legislative initiatives, India's approach to traditional knowledge protection has also been informed by the institution of institutions that play a vital role in bridging the gap between knowledge systems and laws. Some of these institutions include the Council of Scientific and Industrial Research (CSIR), the National Biodiversity Authority (NBA), Geographical Indications Registry, and the National Innovation Foundation (NIF).

These institutions do more than merely overseeing legislation. Some, like the NBA and NIF, have been engaged in awareness generation activities, documentation work, and capacity building exercises. Others, such as CSIR, have played significant roles in the development and maintenance of the TKDL.

The establishment and operation of these institutions speak to the realization that traditional knowledge cannot be effectively protected through laws alone. Legal frameworks have to be supplemented by supportive mechanisms that facilitate participation, access to resources, and assertion of community rights. Through these institutions, India has managed to improve its approach to protecting the TK system.

However, effective cooperation between institutions remains a challenging issue. Overlapping mandates, bureaucratic difficulties, and lack of outreach can significantly limit the impact of institutional measures in achieving the objective. Coordination is thus necessary to ensure that institutions achieve the desired results.

3.7 International Engagement and Emerging Norms

Another aspect of India's strategy to protect traditional knowledge systems involves the country's international legal engagement. India has actively participated in international dialogue aimed at increasing transparency and equity in intellectual property law. This participation has seen India propose changes in the international law relating to the protection of genetic resources and associated TK.

An example of India's success in international negotiations is the adoption of a treaty on intellectual property, genetic resources, and associated traditional knowledge at the World Intellectual Property Organization in 2024. Among other things, this treaty will require disclosure in patent applications, including identification of the source of genetic resources and the associated TK.¹⁶

Although the treaty still fails to provide answers on the issues of ownership and sharing benefits, it is nonetheless an important step forward in the direction of the introduction of considerations regarding traditional knowledge to international intellectual property laws. As

¹⁶ World Intellectual Property Organization, *WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge* (2024).

far as India is concerned, the NGRFAA serves as an important step forward in ensuring accountability and transparency concerning the usage of biological resources.

Of course, there are certain problems associated with international cooperation, due to legal differences and economic inequalities among different countries, which may make some global agreements less efficient. However, the fact that India plays an active part in these negotiations is evidence of its commitment to addressing the issue of traditional knowledge protection at the international level as well.

3.8 Conclusion

In general, the review of India's responses to the problem of protecting traditional knowledge over the recent decade suggests that there has been quite a lot of progress achieved so far, but there are certain limitations to this progress.

Indeed, there are many aspects in which the country has managed to advance significantly, including the increase in the number of protected geographical indications, the efficient work of the TKDL database, the inclusion of the relevant considerations into biodiversity law, as well as the granting of farmers' rights.

On the other hand, there is still quite a lot to do.

CHAPTER 4: DOCTRINAL ANALYSIS OF IP TOOLS AND THEIR LIMITS

4.1 Introduction: Mapping Intellectual Property onto Traditional Knowledge

The doctrinal examination of intellectual property law and traditional knowledge systems creates their most complete understanding. The previous chapters established the main conceptual conflicts and institutional changes, but the current study examines how legal instruments function in reality and which aspects of their performance they do not achieve. The legal system of intellectual property rights functions through separate systems which operate under different rules that govern patents, geographical indications, plant variety protection, trademarks, and biodiversity-linked regulations. The application of these regimes to traditional knowledge results in unpredictable and incomplete results.¹⁷

¹⁷ World Intellectual Property Organization, *Traditional Knowledge and Intellectual Property: Background Brief*(WIPO 2023).

In this regard, the problem with the doctrine of intellectual property law resides in the fact that the underlying assumptions of this system are fundamentally inconsistent with the nature of traditional knowledge. Whereas intellectual property relies upon principles such as novelty, exclusivity, and individual ownership, traditional knowledge tends to be cumulative, shared, and undocumented. In essence, intellectual property instruments are therefore partial tools for the protection of traditional knowledge.

For this reason, in this chapter I shall attempt a critical analysis of four of the main doctrinal tools for the protection of TK, i.e. patents, geographical indications, farmers' rights, and biological diversity laws. While these instruments can be seen as having contributed to avoiding misappropriation and acknowledging traditional knowledge, they remain limited by intrinsic problems in their very nature which require an overall approach.

4.2 Patent Doctrine and Traditional Knowledge: Between Exclusion and Appropriation

Perhaps no legal doctrine is as relevant to debates concerning traditional knowledge as the patent one, since its very nature allows it both to contribute to its appropriation and protection. The possibility of granting exclusive rights upon inventions may turn TK into private property and exclude the communities of its creation. Conversely, the same patent doctrine provides defensive means against that outcome.

One aspect of Indian patent legislation particularly interesting in view of the above discussion is the explicit exclusion from patentability of any invention derived from traditional knowledge. Indeed, section 3(p) of the Patents Act excludes from the scope of protected inventions those inventions involving merely aggregation of properties of traditional knowledge constituents.¹⁸

Other sections of the Act indirectly contribute to the protection of traditional knowledge too. In particular, the section concerning novelty makes impossible the registration of the invention that is already available in the public domain. Likewise, the provisions related to enhanced efficacy of the drug, considered by the judicial interpretation, limit the possibilities of obtaining patent for the modifications of the existing products, hence lowering risks of appropriating of traditional knowledge in the medicinal field.

¹⁸ The Patents Act, No. 39 of 1970, INDIA CODE § 3(p) (1970).

However, patent law still raises many concerns. The main obstacle to protecting traditional knowledge is the requirement of prior art that should be documented. Knowledge that does not meet the last requirement is less likely to be considered prior art and hence will not stop a person from registering his or her knowledge. However, this issue was solved to some extent by the development of the Traditional Knowledge Digital Library project that is supposed to cover only codified knowledge of a community.

Moreover, nowadays the rapid progress in technological innovations increases chances of appropriating of traditional knowledge. The application of modern techniques such as biotechnology and artificial intelligence makes possible discovering the new applications of traditional medicines. If the application discovered as a result of scientific research is novel and non-obvious, it can become patent-protected invention.

Thus, as was said above, patent law is a double-edged sword since it gives people the opportunity to protect traditional knowledge using defensive approaches but, at the same time, enables appropriating of the former. Therefore, the theoretical basis of patent law can hardly solve the problems that arise in practice.

4.3 Geographical Indications: Collective Reputation and Its Constraints

Unlike patent law, GIs present the most promising means of protecting traditional knowledge since they rely on collective reputation. Thus, geographical indications are quite close to the notion of collective property, which makes them an ideal tool for addressing this problem.

Accordingly, the provisions of the Geographical Indications of Goods (Registration and Protection) Act, 1999 make it possible for the producers of traditional goods to get certain protection for their products in terms of geographical indications in the Indian state.¹⁹

It is possible to highlight some of the doctrinal advantages of GIs in comparison with IPRs. The main advantage of the GI approach is its ability to connect products with their specific cultural and geographical origin. Thus, such an approach makes it possible to recognize traditional knowledge without referring to the identification of specific inventors or proving novelty in such cases. In other words, GIs offer a mechanism of positive protection, which suits

¹⁹ The Geographical Indications of Goods (Registration and Protection) Act, No. 48 of 1999, INDIA CODE (1999).

the peculiarities of traditional knowledge better than IPRs.

At the same time, it is necessary to mention some limitations, which apply to GIs. First of all, it is possible to speak about the issue of benefits distribution, since GIs imply the existence of a collective right, but do not guarantee equal distribution of the benefits gained by different parties involved in GI use. As a rule, the value of GI is captured by larger producers and exporters, while local artisans and farmers are left aside.

Another limitation is connected with the necessity to enforce GIs to make sure that they are protected properly. GI protection is especially complicated in cases when GIs should be protected on an international scale, which may lead to the need for considerable resources to fight counterfeits and imitation.

Finally, it is possible to point out that GIs are used only for some categories of traditional knowledge, which can be connected with tangible goods rather than ritual or practice. Thus, despite some potential, GIs cannot be applied to all types of traditional knowledge.

4.4 Farmers' Rights and Plant Variety Protection: Recognizing Agrarian Innovation

In addition to GIs, farmers' rights can be recognized under the Act concerning protection of plant varieties in India. Unlike typical laws on the protection of plant varieties, this Act provides protection for farmers as innovators and contributors to development and maintenance of different plant varieties. From a doctrinal perspective, the uniqueness of this approach consists in the fact that the Act recognizes two categories of people: breeders and farmers, and both of them can obtain protection under the current legal regime.²⁰

Benefit-sharing is another unique feature that characterizes the Indian approach. If a registered variety is developed using traditional knowledge or any kind of genetic resources provided by farmers, then there are certain ways through which these communities can get their share of benefits. This move goes a long way in dealing with the aspect of distribution within intellectual property rights.

Nevertheless, there are numerous obstacles associated with the implementation of farmers' rights. The registration process might be complicated and challenging for individual farmers

²⁰ The Protection of Plant Varieties and Farmers' Rights Act, No. 53 of 2001, INDIA CODE (2001).

or groups to follow. In addition, a lack of awareness and institutional capacity hinders farmers from accessing these services.

There are ongoing conflicts between the interest of corporations and the rights of local communities. There is no denying the fact that agricultural activities have been commercialized to a greater extent, and big corporations dominate the field.

It should be noted that the PPVFR framework offers an innovative approach to intellectual property rights; however, its effectiveness hinges upon proper implementation.

4.5 Biodiversity Law and Intellectual Property Rights: Access and Benefit Sharing

The relationship between biodiversity law and intellectual property is an important consideration in the legal regime covering traditional knowledge. The Biological Diversity Act, 2002, outlines the access regulation system and provides for the equitable sharing of benefits arising out of the utilization of such resources.²¹

One of the critical components of the Act is the need for obtaining the prior consent from the National Biodiversity Authority for some activities related to the utilization of biological resources. In addition, any application for the acquisition of intellectual property should be subject to obtaining the necessary permission from the authority. The provision creates an additional level of control over the activities to prevent unauthorized use of resources.

It should be noted that the access and benefit-sharing scheme allows addressing such social issues as ensuring the distribution of profits from the use of knowledge and other resources. Therefore, the focus shifts from the pure protection of traditional knowledge towards ensuring the distributive justice.

The limitation of such an approach relates to several factors. First, it is important to mention the complexities of the procedure itself and the associated difficulties in obtaining the necessary agreement. As a result, it takes a considerable amount of time for the procedure to be completed. Secondly, there are still difficulties regarding the proper distribution of profits.

Another issue worth discussing relates to the coordination of the two areas of law. Namely, it

²¹ Biological Diversity Act, No. 18 of 2003, INDIA CODE (2003).

may be difficult to ensure that biodiversity laws are compatible with the existing rules in the area of intellectual property.

4.6 The Limits of a Fragmented Doctrinal Framework

Analysis of the individual intellectual property regime shows a trend that can be observed in all four regimes described above. Namely, each regime aims at solving particular issues of traditional knowledge protection without fully addressing other issues. Patents provide for protective measures while having potential to lead to appropriation; GIs help to obtain recognition without being effective enough to ensure enforcement and distribution; farmers' rights protect innovative work performed collectively without being implemented; finally, biodiversity laws provide for sharing benefits which proves to be ineffective as well.

One should mention that the aforementioned fragmentation of legal measures to solve problems of traditional knowledge protection is not only technical but also philosophical. It seems that intellectual property law per se is not able to consider the very nature of traditional knowledge. In its current state, IP law does not allow incorporating all its peculiarities, thus resulting in inconsistencies and imperfections.

In addition to those doctrinal reasons, there exist various external factors that make traditional knowledge even more difficult to protect through application of intellectual property regime.

One of them is an obvious imbalance of powers between the communities holding the information and the institutions trying to implement certain IP rights. As a result, the communities might have difficulties in accessing IP law-related information and applying legal tools due to lack of appropriate resources and institutional support.

Finally, technological developments contribute significantly to making it even more complicated to protect traditional knowledge. With the advent of digital technologies, information becomes easier to extract on large scales and distribute worldwide. The use of data mining and artificial intelligence makes it impossible to control and regulate the usage of information in accordance with IP law.

4.7 Towards a Multi-Layered Legal Approach

Based on the analysis conducted in the previous section, it seems clear that the problems

discussed above require a new approach to the legal regulation of the use of traditional knowledge. First, there should be a multi-level solution that would combine different IP tools along with additional measures to solve particular issues related to protection and utilization of traditional knowledge.

It is also worth mentioning that the international dimension is another essential element that should be taken into account when developing an IP approach towards traditional knowledge protection. Recent developments made by the World Intellectual Property Organization prove to be promising in this respect.

CHAPTER 5: CONTEMPORARY CHALLENGES AND EMERGING RISKS

5.1 Introduction: The Changing Landscape of Traditional Knowledge Protection

The protection of traditional knowledge in India has undergone substantial improvements during the past ten years because of institutional growth and legal progress and increased international participation. The new challenges that have emerged together with the new developments present tests which go beyond what current systems can handle. The challenges that arise from this situation go beyond previous issues about misappropriation and recognition because they create new structural and technological and economic changes which transform how traditional knowledge exists in different situations.

The current environment shows three main trends which include fast digital progress and worldwide market growth and rising demand for knowledge systems as commercial products. Traditional knowledge has expanded beyond its original boundaries which restricted it to local practices because it can now be extracted and copied and sold throughout worldwide markets. The legal system needs to develop better tools while institutions must enhance their capacity to manage new dangers which emerge in the present time.²²

Chapter five is dedicated to an analysis of major challenges related to the current state of affairs. It addresses issues such as fragmentation of legal protection, asymmetries in power and access to information, vulnerability of uncodified knowledge, technological change, problems with enforcement and compliance, as well as human rights issues associated with the protection of

²² World Intellectual Property Organization, *Traditional Knowledge and Intellectual Property: Background Brief* (WIPO 2023).

traditional knowledge.

5.2 Fragmentation of Legal Protection and Institutional Overlaps

Fragmentation of legal protection represents one of the main challenges in the protection of traditional knowledge. As already mentioned before, there are numerous different legal regimes which regulate various aspects of protection of traditional knowledge. These include the patent law regime, the geographical indication regime, the biodiversity regime, and the farmers' rights regime. In spite of the advantages provided by the existence of the multiple regimes, their fragmentation brings about a number of difficulties as well.

Due to the fragmented character of the existing legal order, similar situations can be regulated in different ways depending on which particular legal regime they are covered by. Thus, issues concerning traditional medicinal knowledge may fall under the jurisdiction of either patent law, biodiversity law, or consumer protection regulations.²³

The institutional overlaps make matters worse by creating further inefficiencies. Several institutions like the National Biodiversity Authority, Geographical Indications Registry, and different ministries work independently and without sufficient coordination in their respective spheres. This often leads to wastage in effort, indecision and weak enforcement.

Community engagement through this complex system becomes problematic in many ways for communities, especially rural or marginalized ones. Communities rarely get help with proper legal assistance in utilizing these systems for their benefit. Hence, while on paper there are multiple levels of protection available, the actual application of these can be hindered.

5.3 Asymmetries in Bargaining Capacity and Economic Inequality

Another critical issue regarding the protection of TK involves the asymmetries in bargaining capacity between the community and the corporations or individuals trying to capitalize on the TK. Even though the community has all the knowledge, they do not have the necessary financial, legal and technical means to negotiate an equal deal or protect their interests.

It is apparent in the commercialized use of traditional knowledge-based products where large

²³ The Patents Act, No. 39 of 1970, INDIA CODE (1970); Biological Diversity Act, No. 18 of 2003, INDIA CODE (2003).

corporations or individuals manage to capture most of the value generated by these products. Conversely, the communities contributing with their knowledge remain un-rewarded.²⁴

However, apart from being a legal problem, it is more an economic problem as well. Although benefit sharing frameworks exist in many jurisdictions, it is difficult for indigenous communities to take advantage of their rights. It is because procedures are complex, and enforcement mechanisms are weak.

Furthermore, the commercialization of traditional knowledge can cause unforeseen consequences. For instance, the use of indigenous knowledge in business may lead to its commodification, which, in turn, undermines the cultural and social aspect of knowledge utilization. When knowledge is integrated into global value chains, it loses its local meanings and functions.

As such, the solution to the problem of asymmetry should address socio-economic imbalances in addition to legal problems. It means that indigenous communities should be strengthened economically to have sufficient power to participate in market relations and ensure fair distribution of benefits.

5.4 Vulnerability of Non-Codified and Living Knowledge Systems

In spite of various measures to protect knowledge systems of indigenous peoples, much of traditional knowledge still remains unprotected. For example, initiatives such as the Traditional Knowledge Digital Library improved the protection of codified knowledge. However, there is still much non-codified knowledge, which, consequently, becomes highly vulnerable.

Non-codified knowledge includes oral traditions, ritual practices, ecological knowledge, and other types of living knowledge, which are passed down generations not through documents but practice. The vulnerability of non-codified knowledge lies in the fact that it is not recognized within formal legal systems. In other words, since it is not documented, it cannot be established as prior art or protected by intellectual property laws.

In this regard, there is a risk of misappropriation of knowledge, especially when knowledge is extracted from communities and transformed into commercial products. Documenting

²⁴ Vandana Shiva, *Biopiracy: The Plunder of Nature and Knowledge* (South End Press 1997).

knowledge, however, presents its own risks. First, documentation facilitates the protection of knowledge but makes it more available to wider circles and thus more prone to misuse. Second, documenting non-codified knowledge poses ethical issues concerning consent, ownership, and cultural context of knowledge.²⁵

5.5 Digitalization, Artificial Intelligence, and Knowledge Extraction

In the modern world, the rise of digital innovations and artificial intelligence technology has changed how knowledge protection is conducted in relation to the traditional knowledge system. This is because digitization of large volumes of information accompanied by advanced forms of data analytics allow extraction and exploitation of the traditional knowledge base for profit.

The processing of information by AI can include the extraction and utilization of the information from the traditional knowledge database as well. However, there is no consensus regarding attribution and the possibility of intellectual property protection in such circumstances.

First of all, this problem is linked to the issue of regulating use of traditional knowledge within the framework of national legislation. It should be noted that AI systems work independently on digital platforms regardless of their jurisdiction, which makes the traditional regulation methods inappropriate for protecting the intellectual property of indigenous communities.

Secondly, when the traditional knowledge database is accessed and exploited, it becomes possible to find novel ways of using the substance mentioned within the traditional practice. Even though it is traditional knowledge, its new use as described by AI may satisfy the criteria of intellectual property protection.²⁶

5.6 Enforcement Challenges and Weak Regulatory Capacity

The efficiency of any system lies not only in how well it protects the interests of its participants but also in how effectively it enforces legal provisions. In the case of protection of traditional knowledge, the question of enforcement remains relevant to date. Despite having certain

²⁵ Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

²⁶ World Intellectual Property Organization, *WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge* (2024).

mechanisms for protection embedded into various regulatory acts, enforcement faces many difficulties and lacks certain resources.

Firstly, the problem is relevant when talking about geographical indications and regulation of biodiversity. There still persists unauthorized usage of GI products in domestic as well as foreign markets. Monitoring the observance of access to benefits requirements in many cases can be a challenge due to a number of reasons.

Secondly, there is a lack of knowledge regarding the issue in general. Often communities that own some piece of information or knowledge simply ignore the fact that it has to be protected and even do not know about the possibility to obtain monetary profit from this kind of actions.

Thirdly, there are always delays related to the legal process which might undermine the protection potential of such a system. Once traditional knowledge has been misappropriated or commercialized, it becomes hard to bring back the status quo ante.

The necessity to strengthen enforcement capacities should not be underestimated in any way.

5.7 Measuring Benefit and the Problem of Equity

It is important to consider another very important but rather underresearched issue related to the protection of TK – the problem of measuring benefit and distributing it equally. Although in all legislative acts concerning protection of knowledge there is a mention about sharing benefits with the communities who own them, no clear criteria are provided for this process.

In fact, it could be quite complicated because besides money benefits communities might receive something else such as development and capacity-building. Determining the benefits' value and effect is a challenge on its own.

Furthermore, the question of distribution within a community might become complicated if one considers that TK owners usually constitute an ethnic group. Therefore, determining who gets how much is not always an easy task.

Last but not least, there is always an issue of transparency regarding benefit distribution that makes it harder to distribute resources fairly.

5.8 Constitutional and Human Rights Dimensions

The protection of traditional knowledge extends beyond intellectual property laws because it involves constitutional rights and human rights matters. The traditional knowledge debate addresses three main topics which include cultural identity and community autonomy and resource access. The Indian constitutional framework establishes equality and dignity and cultural rights as essential rights which protect traditional knowledge throughout the nation.

Community rights recognition and cultural heritage preservation requirements support social justice objectives and inclusive development goals.

The Convention on Biological Diversity and other international instruments establish traditional knowledge rights which require its protection and equitable benefit sharing according to its original custodians. The principles establish growing recognition of traditional knowledge rights which connect to human rights protections.²⁷

The process of creating effective legal protections from these principles remains a difficult task. The intellectual property system requires a new understanding because human rights need to be integrated into the system as human rights form the basis of cultural and social identity.

5.9 Concluding Observations: Emerging Risks and the Need for Adaptation

The traditional knowledge protection system in India faces ongoing challenges because its current methods of operation face difficulties in protecting traditional knowledge. The development of legal and institutional frameworks has achieved significant progress yet new technologies and market dynamics and socio-economic factors continue to challenge their functionality. The existing problems of fragmentation and enforcement deficits and inequality require organizations to adopt a better method that combines three different elements. Organizations require legal frameworks that must evolve to solve current operational issues and to protect against new threats which arise from digitalization and globalization. Traditional knowledge protection requires an all-encompassing approach which uses legal innovations to empower communities while building institutional capacity and fostering global partnerships. The four elements of protection and recognition and equity must maintain a balance through this approach.

²⁷ Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

CHAPTER 6: REFORM, FUTURE DIRECTIONS AND CONCLUSION

6.1 Introduction: From Protection to Transformation

The previous chapters have shown that India's current system for safeguarding traditional knowledge and indigenous innovation has developed into a complicated yet incomplete protection system. The implementation of legislative measures together with institutional programs and international partnerships has resulted in progress however the system still suffers from operational breakdowns and inconsistent enforcement practices and fundamental system deficiencies. The current situation demands both an enhancement of existing systems and a complete redesign of protection systems.

The protection of traditional knowledge requires more than single legal solutions because this approach fails to provide adequate protection. The system needs complete reform which combines all legal frameworks and institutional systems and technological resources and community participation. The chapter presents a transformation plan which establishes essential reforms and future paths that will lead to the development of India's legal system. The discussion presents a more advanced comprehensive solution which matches with current knowledge systems instead of making small changes.²⁸

6.2 Towards a Layered and Integrated Protection Model

One important issue arising from this research is that there needs to be an approach with layers to protect traditional knowledge. This is because the current system has many different laws for various facets of traditional knowledge but is fragmented. To address this, a model must be developed with three components – defensive, positive, and distributive measures.

Defensive measures, for example, using database systems like Traditional Knowledge Digital Libraries, are already in place, but need to continue to operate to prevent any misappropriation. Positive protection measures must be used to give recognition to the communities involved, while distributive measures need to be strengthened to ensure benefits can be distributed to all parties.

In addition, the model must be able to work seamlessly across many different laws which apply

²⁸ World Intellectual Property Organization, *Traditional Knowledge and Intellectual Property: Background Brief*(WIPO 2023).

to various aspects of protecting traditional knowledge. These include laws such as patents, geographical indications, biodiversity, and farmers' rights. They must work together to provide a seamless process of protecting traditional knowledge.

The model will have to also have a certain level of flexibility, since there are different types of traditional knowledge to be protected. A flexible approach will mean that different measures will be taken depending on the situation, rather than forcing all types of knowledge into one box or category.²⁹

6.3 Strengthening Geographical Indications and Community Ownership

Geographical indications have emerged as one of the most effective tools for recognizing traditional knowledge linked to specific regions. The full potential of these systems remains unexploited because of existing problems with their governance and enforcement mechanisms and their benefit distribution systems. The GI system needs to transform its operations from traditional registration practices into efficient methods for managing post-registration processes.

The primary development in this area involves increasing community involvement with GI governance activities. The legal framework enables groups to share ownership rights but actual control of GI products belongs to organized groups and intermediaries. The decision-making process needs to include artisans and producers because their involvement will create fair results.

The development of quality control systems and branding mechanisms and market access solutions is necessary for increasing GI product value. The establishment of support systems through producer cooperatives and marketing platforms and certification systems will enable communities to benefit from their indigenous knowledge. International protection of GIs also requires greater attention. The international recognition of traditional products will increase when India strengthens its international agreements and enforcement mechanisms to combat cross-border product theft.³⁰

²⁹ The Patents Act, No. 39 of 1970, INDIA CODE (1970); Biological Diversity Act, No. 18 of 2003, INDIA CODE (2003).

³⁰ The Geographical Indications of Goods (Registration and Protection) Act, No. 48 of 1999, INDIA CODE (1999).

6.4 Expanding Protection for Non-Codified and Living Knowledge

The existing framework needs improvement because it fails to protect both non-codified traditional knowledge and living traditional knowledge systems. The TKDL program has successfully improved codified knowledge protection but a substantial body of knowledge remains undocumented and unprotected. The gap establishes the need for mechanisms which operate without needing formal documentation. Community-based registers enable knowledge preservation because they maintain cultural context and empower communities to control their knowledge. The design of registers requires protection measures which block unauthorized users from accessing the system.

The legal recognition of customary laws together with their associated practices serves as a vital tool for safeguarding indigenous knowledge systems. The establishment of community norms as formal legal components creates an inclusive governance system which accurately represents local knowledge management practices. The documentation process requires careful management because it may lead to knowledge being treated as a commercial product which results in its original value being lost. Traditional knowledge protection needs to maintain cultural integrity while providing needed visibility for traditional knowledge.³¹

6.5 Aligning Patent Law with Disclosure and Community Sensitivity

The protection of traditional knowledge through patent law will maintain its essential function because it prevents unauthorized use of this knowledge. The system requires transparency and accountability enhancements through its operational mechanisms to achieve its intended goals. The system requires enhancement through both disclosure requirements and their particular disclosure requirements which need to be strengthened. Patent applicants should be required to disclose the origin of biological resources and associated traditional knowledge used in their inventions. This requirement which has gained recognition in international frameworks can serve as a tool for ensuring that communities are acknowledged and that benefit-sharing obligations are triggered where appropriate.

The patent examination process must align with actual practices connected to traditional knowledge because it needs this alignment to function properly. The process requires three improvements which include bettering TKDL database access and creating better training

³¹ Convention on Biological Diversity, June 5, 1992, 1760 U.N.T.S. 79.

programs for patent examiners while establishing assessment standards for inventions that use traditional knowledge. The patent system requires ethical elements to be part of its foundation because they form the basic components of patent law. The legal system needs to establish more control over inventions which use knowledge that was obtained from communities without their approval or which violates their established customs. The reforms which would create a new understanding of patentability present essential changes which need to happen because they will establish just and balanced system operations.³²

6.6 Strengthening Benefit-Sharing and Community Participation

The benefit-sharing principle is at the core of the strategy to achieve equity in the utilization of traditional knowledge. As pointed out in previous chapters, however, the application of this principle has been problematic. Improving benefit-sharing mechanisms will involve both legal and institutional interventions.

One of these problems is the opacity surrounding the issue of benefit-sharing itself. In this respect, setting out guidelines that would clarify how to determine benefits as well as their adequate distribution would be useful.

At the same time, community involvement will be central to ensuring the successful implementation of the principle of benefit-sharing. To achieve this, institutional arrangements will have to be created for offering legal, educational, organizational, and informational assistance.

Finally, another issue that needs to be addressed is that of monetary benefits. The emphasis on financial benefit-sharing could be counterproductive since non-monetary forms of benefit sharing (technology transfer, training, etc.) can prove just as valuable.

Overall, implementing the principles of benefit-sharing requires adopting a less transactional and a more participatory approach to utilizing traditional knowledge.

6.7 Introducing Digital Governance and Mitigating Technological Risks

Rapid technological development, including the emergence of artificial intelligence, brings

³² The Protection of Plant Varieties and Farmers' Rights Act, No. 53 of 2001, INDIA CODE (2001).

new threats to the traditional knowledge regime. Such a risk is posed by the possibility of extracting and commercializing knowledge on a large scale.

To mitigate these risks, digital governance will have to be introduced. It will be based on the creation of policies and regulatory measures aimed at regulating the use of knowledge within the digital realm. It will also require developing data governance frameworks that would allow establishing rules concerning access, collection, use, storage, and sharing of data related to traditional knowledge.

Additionally, it is necessary to pay attention to the specific issue of artificial intelligence and its implications for traditional knowledge. These include issues of attribution, ownership, and benefit-sharing associated with AI use and the generation of value. Given that these are global problems that affect knowledge in many countries, it is vital to involve international institutions in solving them. In particular, this means turning to the experience of the World Intellectual Property Organization.³³

6.8 Towards a Sui Generis Framework for Traditional Knowledge

However, there exist some disadvantages of using the available IPR tools for the protection of traditional knowledge. One suggestion that arises in the context of these drawbacks is the use of a sui generis framework to address them. A sui generis approach could be effective due to its flexibility and ability to address certain specific aspects associated with the protection of traditional knowledge.

For example, a sui generis approach could consider aspects such as collective ownership, perpetual protection of traditional knowledge, as well as customary laws. The use of sui generis models can also allow for protection of non-codified or living knowledge.

However, the use of this strategy raises several challenges. For instance, there is the question regarding the definition of the protected subjects and determination of beneficiaries. At the same time, there may be an issue related to compatibility with the legal framework.

Nevertheless, the use of the sui generis model seems appropriate to solve many of the problems

³³ World Intellectual Property Organization, *WIPO Treaty on Intellectual Property, Genetic Resources and Associated Traditional Knowledge* (2024).

associated with the protection of traditional knowledge outlined above.

6.9 India's Role in Global Norm-Setting

India is one of the countries playing the key role in the establishment of international norms related to the protection of traditional knowledge. Its experience, particularly concerning the adoption of the measures focused on defensive protection and benefit-sharing, is invaluable in this regard.

In the future, India can make important contributions to global norm-formation through its active involvement in treaty negotiations. Also, it may collaborate with other nations in creating the new norms. Moreover, India can become the source of the best practices and recommendations. It should also be noted that the development of the domestic innovative strategies by India would also help advance the global process in terms of the protection of traditional knowledge. However, in order to do so, India needs to pay more attention to the alignment of the domestic legal framework with its international obligations.

6.10 Conclusion: Re-centering Communities in the Legal Framework

Having analyzed all the aspects of intellectual property law in the course of this research, it becomes apparent that it has both strengths and limitations in terms of providing protection for traditional knowledge. For example, the strengths of the framework lie in its ability to prevent misappropriations and offer certain levels of recognition. However, the limitation of fragmentation, inequity, and non-adaptability should not be ignored.

Considering the challenges associated with the protection of TK and innovation, there is only one viable option – a new approach. In particular, there is a need for a change in the way communities are centered in the legal framework. Thus, future steps in terms of the protection of traditional knowledge should focus on strengthening this aspect of protection. Such approach can help achieve positive results in this sphere in the long run.

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