

Protection of Traditional Knowledge of Indigenous Community in Bangladesh: A Critical Analysis on the Legal Framework

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ABSTRACT

Nestled amidst the verdant hills and vibrant cultural tapestry of Bangladesh, indigenous communities stand as the vibrant threads weaving a rich heritage of resilience and tradition. This essay delves into the heart of this cultural mosaic, exploring the significance of Indigenous Traditional Knowledge (TK) that intricately shapes the lives of these communities in agriculture, medicine, music, literature, and home decor. Indigenous peoples, custodians of ancestral wisdom, face a pressing challenge — the exploitation of their TK by external entities for commercial gains without due benefit to the original owners. This paper illuminates the insufficiency of existing legal protection for indigenous traditional knowledge and articulates the far-reaching consequences of this oversight. Focusing on the nexus between indigenous heritage and legal frameworks, the essay proposes a compelling argument for aligning Bangladesh's domestic laws with international legal obligations. The need for supplementary provisions to fortify implementation mechanisms within relevant statutes is underscored. By highlighting the gaps in the legal landscape, this essay advocates for a transformative approach that ensures the equitable protection and preservation of Indigenous Traditional Knowledge. In essence, the essay serves as a clarion call for legal reforms, urging Bangladesh to fortify its commitment to the preservation of indigenous heritage, fostering a future where the vibrant threads of tradition are shielded from exploitation, and the tapestry of resilience continues to flourish.

Keywords: Traditional knowledge, Convention on Biological Diversity, Nagoya Protocol, benefit-sharing, prior informed consent, bio piracy, Traditional cultural expression, 8Fair and Equitable Benefit-Sharing (ABS

INTRODUCTION

Background of the study

Amidst the lush hills and vibrant cultures of Bangladesh, indigenous communities form the colorful threads of a rich tapestry, weaving together traditions, languages, and ancestral wisdom that paint a portrait of resilience and heritage. Indigenous peoples are the descendants of individuals who occupied a geographic territory when people of various ethnic origins came arrived. Bangladesh has over 54 unique indigenous groups. The Chittagong Hill Tracts have the highest concentration, although these people also exist in Chittagong, greater Mymensingh, greater Rajshahi, greater Sylhet, Patuakhali, and Barguna. Some of Bangladesh's well-known Adivasi/ethnic minority populations include the Chakma, Garo, Manipuri, Marma, Munda, Oraon, Santal, Khasi, Kuki, Tripura, Mro, Hajong, and Rakhain. They are referred to as "tribals" in official documents. Despite the fact that section 97 of the SAT Act (1950) and Act 12 of 1995 and Rules 6, 34, 45, and 50 of the Chittagong Hill Tracts (CHT) Regulation (1900) refer to them as indigenous peoples or aboriginal.

In Bangladesh, indigenous peoples are also referred to as Adivasi. Considering creations a gift, these indigenous communities have established an extensive understanding of traditional knowledge which is the inclusion of nature, plants, animals, medicines, and spirituality. Besides, they have passed down songs, tales, designs, and methods of doing things that represent their history, culture, ethics, and inventiveness and are founded on customary rules and norms since the beginning of time.

Indigenous Traditional Knowledge hasn't been developed in a day but rather been developed over time to time based on experiences and adoption to culture and environment in order to maintain the genetic resources necessary for the continued survival of the community and to sustain the culture. Many of these communities are the individual creators of artistic and literary works, developers of new technology, and purveyors of knowledge. Bio-piracy defined as the illicit use of traditional knowledge (TK) for commercial advantage without attribution to the source or payment in kind, is a significant concern for 21st-century traditional knowledge holders. Several well-known instances include a neem patent, a turmeric patent for treating wounds, and more. In Bangladesh, Folklore like the Lalon song and indigenous medicines Ayurveda or herbs utilized by the Kabirajes have been misused or mistreated. In order to promote and safeguard of these innovations, Intellectual Property (IP) laws have their strengths and weaknesses in what they can and cannot do. Intellectual property rights (IPRs) are legal protections granted to individuals for their creative endeavors, and they often grant the artist an exclusive right.

Indigenous intellectual property includes information about indigenous cultures, traditions, beliefs, and philosophy. When an indigenous group's traditional knowledge is taken away, the community loses control over how that knowledge is used. In most cases, this system of knowledge emerged over many centuries and is unique to indigenous peoples' customs, traditions, territory, and resources. Indigenous peoples have the right to protect their intellectual property and to prevent it from being misappropriated or abused. This form of ownership is protected by states' intellectual property rights system, creation of sui generis solutions (of its own kind laws), and promoted by the World Trade Organization (WTO) and the World Intellectual Property Organization (WIPO) - as the fundamental method for deciding ownership and property rights over information, processes, ideas, inventions, and even naturally occurring phenomes for a specific length of time. The indigenous community must come up with a plan to safeguard traditional knowledge. By doing this, they can prevent third parties looking to promote their illegal commercial gains or make benefit from them from taking ownership of indigenous traditional knowledge. The capacity to receive protection under intellectual property rules may be in jeopardy if traditional knowledge is made publicly available. Besides under Environmental Law, these indigenous traditional knowledge is being protected too though most of these instruments work as soft laws under International Law.

Statement of the Research Problem

Despite the fact that Bangladesh has ratified numerous international treaties relating to the protection of biodiversity-related information and intellectual property rights system, there is still a legal vacuum in which Bangladeshi TK is vulnerable to misuse. For example, under Goal No. 6 of the National Innovation and Intellectual Property Policy 2018, new laws will be passed to safeguard traditional knowledge, current IP laws will be examined, and a database pertaining to traditional knowledge will be established. Although a time range for achieving the goal has been specified under this policy, but it does not describe the exact mechanism for achieving it. Moreover, there is no legal instrument in force to protect these knowledge or cultivars though there are some draft legislation to protect traditional knowledge. The Biodiversity and Community Protection Act 1998 and Plant Varieties Act 1998 are still in the form of a draft and have not been implemented yet. The World Intellectual Property Organization, which is part of a larger United Nations effort to promote better value and protection for the rich diversity of this planet's indigenous, intangible cultural heritage, has most recently promoted this idea, which emerged from a predominantly Western legal tradition. A Western-centric view of intellectual property is frequently imposed, which is doesn't align with the communal and social nature of indigenous traditional knowledge. Thus indigenous customary laws and practices are routinely ignored or disrespected by the intellectual property rights regime. Furthermore, Traditional Knowledge is frequently viewed as a communal resource in indigenous civilizations; it is produced collaboratively and owned collectively by the entire society. So the use, dissemination, and preservation of this knowledge should be governed and guided by traditional customs and laws by this collective indigenous community. Without the awareness or consent of the indigenous communities, if traditional knowledge is used by third parties for their commercial gain, it may result in the improper use, exploitation, or commercialization of traditional knowledge.

Significance of the study

Under the concept of intellectual sovereignty, indigenous community have the right to assert anything that their groups currently know, have known, or will come to know about indigenous intellectual property related rights under national and international forums .This paper shall outline existing legal tools to protect the traditional knowledge and IP of indigenous people in Bangladesh along with its loopholes and adequacy. Also, an overview of issues relating to traditional knowledge, intellectual property, and indigenous communities shall be discussed in this article .In order to promote a more inclusive and equitable approach to intellectual property that respects the various worldviews and values of indigenous peoples, there is a pressing need for greater recognition and incorporation of indigenous customary laws and knowledge governance systems within the international IPRs framework. Furthermore, this article shall enumerate the necessity of a more inclusive and equitable approach to intellectual property that indigenous communities can use to protect their traditional knowledge.

Research Objectives

1. To determine whether the legal frameworks are adequate for safeguarding Indigenous Traditional Knowledge in Bangladesh.
2. To find out the consequences if Indigenous Traditional Knowledge in Bangladesh is not protected.
3. To determine the necessity to adopt a more inclusive and equitable approach to intellectual property for the protection of indigenous traditional knowledge

Research Questions

1. Whether the legal frameworks are adequate for safeguarding Indigenous Traditional Knowledge in Bangladesh?
2. What are the consequences if Indigenous Traditional Knowledge in Bangladesh is not protected?
3. Whether a more inclusive and equitable approach to intellectual property for the protection of indigenous traditional knowledge need to be adopted?

Scope of the study

As this is a legal research, this study focuses mainly on the legal aspects of protecting indigenous traditional knowledge in the light of existing laws and provisions. It examines the present aspects and significance of existing laws for safeguarding Indigenous Traditional Knowledge in Bangladesh. Besides it outlines existing legal tools to protect the traditional knowledge and IP of indigenous people along with its loopholes by giving an overview of issues relating to traditional knowledge, intellectual property, and indigenous community in Bangladesh. This study includes the challenges of enacting new laws or amending the existing laws and of ensuring the proper implementation mechanism to ensure the legal protection of this traditional knowledge. For the purpose of this study, thorough scrutiny from the scientific perspective is not considered; rather an essential basic idea on that perspective is shown in the necessary scale. Finally, this article examines the necessity of a more inclusive and equitable approach to intellectual property that indigenous communities can use to protect their traditional knowledge.

Limitations of the study

Time limits and availability to information were two common limitations in this study. Besides adequate work and resource materials haven't been found on this topic. For this reason, the researcher had faced some difficulties in finding adequate resources and standard information. Due to a shortage of time, the researcher couldn't collect enough data and had to conduct the research depending on published books and articles .It may lack some authentic information which can enrich the quality of research. Another salient backdrop of this study is that there is a scarcity of adequate case laws which minimizes the opportunity to show the real

scenario of giving punishments and compensations due to the breach of legal frameworks for safeguarding Indigenous Traditional Knowledge in Bangladesh.

LITERATE REVIEW

The article entitled **‘Protecting Indigenous Traditional Knowledge Through a Holistic Principle-Based Approach’**

By Kamrul Hossain & Rosa Maria Ballardini

The complicated legal issues of Indigenous Peoples' traditional knowledge (TK) protection have been discussed. Despite the importance of this knowledge, especially in relation to environmental conservation, biodiversity management, bioresources, and ecosystem management, the current legal frameworks fall short of providing a comprehensive protection regime that respects key ethical principles that are central to Indigenous Peoples. This essay primarily analyses three legal regimes - intellectual property rights (IPR), human rights, and biodiversity - but also looks at certain national solutions in order to map the present options given for defending TK rights. However, as we illustrate in detail, none of these regimes alone provides a workable solution and each has a number of drawbacks. These regimes, along with a few others, might, nevertheless, provide ideal TK protection systems if they were further developed.

The article entitled **‘Protection of Indigenous or Traditional Knowledge under Intellectual Property Laws: An Examination of the Efficacy of Copyright Law, Trade Secret, and SUI Generis Rights’**

By Michael Chukwujindu Ogwezzy

Indigenous people have the right to possess and control indigenous cultural and intellectual property, to ensure that any measures taken to protect that property are based on the principle of self-determination, to be acknowledged as the primary keepers and interpreters of their cultures, to authorize or deny the commercial use of indigenous cultural and intellectual property in accordance with indigenous customary law, and to make decisions about the use of their property.

The article entitled **‘Protection of Traditional Knowledge: Finding an Appropriate Legal Framework for Bangladesh’**

By Mohammad Towhidul Islam & Moniruz Zaman

Under the current IP framework, the rights of TK holders cannot be sufficiently protected. Singular rulings or changes to Bangladesh's present legal system cannot adequately function as TK's suitable method. Trade secrets, copyrights, patents, and trademarks are additional useful tools for protecting TK in addition to the standard IP instruments. Furthermore, in order to safeguard TK through a suitable and practical dual framework, new sui generis laws as well as existing national laws should be created and put into effect. In addition, the intellectual property legal framework has to be changed to prevent inconsistencies between the laws. Additionally, by classifying all forms of TK inside its borders, Bangladesh should acknowledge the contribution of pertinent indigenous people from whom TK is derived..

Another Article named **‘Protection of Traditional Knowledge and Traditional Cultural Expressions in Bangladesh’**

By Razidur Rahman

Bangladesh is a country with a rich heritage of traditional knowledge and traditional cultural expressions that are in the public domain and grant public access by the conventional intellectual property system. But in most of the cases, these are being misused and misappropriated which is argued by the indigenous people, local communities, and state. For example : under The Copyright Act 2000 indigenous folksongs, dance forms, and medicines can be protected as copyright under intellectual property law where the owner of the TK can apply for copyright for getting protection against misappropriation and illegal commercial gain by selling indigenous

traditional Knowledge and cultural expressions. In order to keep the originality and novelty, the draft laws should be enacted and implemented within the transition period by applying the TRIPS agreement to protect TK and TCE in order to uphold the culture and heritage of these indigenous communities of Bangladesh.

The article ‘Legal Protection of Traditional Knowledge (Comparative Study of Bangladesh, Australia and Indonesia)’

By Andi Tyas Tri Wibowo & Joko Setiyono

In the realm of intellectual activity coming from thoughts, concepts, or creations of a country's communal groups Traditional knowledge (traditional knowledge) is included. Traditional Knowledge is one subject that is rife with IPRs. Traditional knowledge (traditional knowledge) is intellectual activity deriving from thoughts, concepts, or discoveries of a country's communal organizations. It is critical to safeguard Traditional Knowledge as time passes. Specifically, the protection of intellectual property laws against traditional knowledge. Legal safeguards This ancient wisdom is practiced not just in developing but also in wealthy nations .this study will be separated into two sections: interpreting traditional knowledge as intellectual property and comparing legal protection for traditional knowledge in Bangladesh, Australia, and Indonesia. The writers of this research are interested in comparing the legal protection of traditional knowledge in many nations, including Bangladesh, Australia, and Indonesia.

The article ‘Opportunities of Traditional Knowledge in Natural Resource Management Experiences from the Chittagong Hill Tracts, Bangladesh’

By Mohammed Mohiuddin & Md. Khairul Alam

The Chittagong Hill Tracts (CHT), situated in Southeast Bangladesh and comprising 10% of the total land area, is home to 13 distinct indigenous tribes. Each tribe possesses unique traditional knowledge crucial for effective natural resource management. This study highlights eight specific aspects of traditional knowledge, including folk classification of landforms, land use zoning, communal reserves for resource management, fuel wood selection, water harvesting practices, and tree management within jhum fields. The Murang community's expertise in coppice management of *Gmelina arborea* Roxb. (gamar) and *Tectona grandis* L. (teak) is discussed, along with insights into timber harvesting timing and the practice of preserving bark in teak logs for economic purposes. The complex interactions among the indigenous tribes' economies, means of subsistence, and cultures highlight how crucial it is for many institutions to work together in order to preserve the natural resources of the Chittagong Hill Tracts.

The book ‘Traditional Knowledge and Intellectual Property: A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting their Intellectual Property and Maintaining Biological Diversity’

By Stephen A. Hansen and Justin W. VanFleet

Intellectual property (IP) has been viewed by all peoples as a basic human right since the 1948 ratification of the Universal Declaration of Human Rights (UDHR). Everyone has a right, according to Article 27 of the Declaration, "to the protection of the moral and material interests resulting from any scientific, literary, or artistic production of which he is the author." Numerous international human rights agreements and papers have reaffirmed the significance of intellectual property as a fundamental right since 1948. As it tries to clarify the consequences and potential remedies to human rights problems regarding IP for traditional knowledge holders, this guidebook marks a step forward in the implementation of Article 27 of the UDHR. Traditional knowledge holders, human rights groups, and legal professionals who deal with local and indigenous populations are intended to benefit from this handbook's increased understanding of intellectual property protection alternatives and challenges. This tool will assist those who possess traditional knowledge in identifying potentially useful safeguards under the existing IPRs system.

The book **‘Intellectual Property, Traditional Knowledge and Traditional Cultural Expression-A guide for countries in transition’**

The purpose of this guide is to help developing countries decide whether and how to conserve indigenous peoples' and local communities' traditional knowledge (TK) and traditional cultural expressions (TCEs). It discusses current worldwide, regional, and national protection mechanisms as well as the intellectual property (IP) ideas involved in safeguarding TK and TCEs. After that, it offers advice on the problems that nations, indigenous peoples, and local communities must deal with when thinking about the role that IP may play in preventing the theft of TK and TCEs and in creating and fairly allocating benefits from their commercialization. A legislative framework for TK and TCE protection as IP is now lacking in countries in transition, just like it is in many other nations.

The article **‘Misappropriation of Ben products and protection of ‘Traditional Cultural Expressions’** of New Age

The Chakma people in the Chittagong Hill Tracts of Bangladesh have a traditional practice called "ben," involving a special type of loom. This tradition is passed down through generations and belongs to the community as a whole. It's a unique part of their culture. The World Intellectual Property Organization (WIPO), part of the United Nations, recognizes such traditions as "traditional cultural expressions" (TCEs). TCEs are important because they represent the culture and knowledge of indigenous communities. WIPO says protecting TCEs is essential for creativity, cultural diversity, and preserving heritage. Some countries have laws to protect TCEs, and others are making such laws. But even without these laws, using TCEs for personal or organizational gain without permission from the community is considered wrong. It's the government's duty to create laws that safeguard these traditions from being used without permission.

The writing, **‘Legal protection of Indigenous Intellectual Property Rights’** of The Daily Star

Indigenous peoples need intellectual property protection that recognizes their close and continuing links to their cultural heritage because they cannot survive or exercise their fundamental human rights as distinct nations, societies, and peoples unless they can conserve, revive, develop, and teach the wisdom they inherited from their ancestors. As a result, indigenous peoples' survival is dependent not just on physical survival, but also on maintaining cultural and spiritual ties with the land, customs, knowledge, and so on.

CONCEPTUAL AND ANALYTICAL FRAMEWORK

Introduction

The Theories of Indigenous Traditional Knowledge provide a deeper dive into the topic, including an analysis of this study as a concept and the bigger picture of the traditional knowledge of the Indigenous community. This chapter will discuss the relevant information and analyze images related to this topic.

CONCEPTUAL FRAMEWORK

A conceptual framework on traditional indigenous knowledge involves organizing and understanding the key components and relationships within the context of indigenous knowledge systems. This conceptual framework provides a structured overview of the key dimensions of traditional indigenous knowledge and serves as a guide for further exploration and research in this field.

Indigenous Community:

The concept of an "indigenous community" encapsulates a rich tapestry of individuals globally, united by a unique attribute: their ancestry traces back to the initial inhabitants of a specific region, maintaining a historical connection with societies that thrived in the area before invasion and colonial eras. The people who live in a place by upholding customs or other elements of an ancient culture connected to the original occupants of that area are referred to as indigenous communities. The word ‘indigenous peoples’ refers to a variety of cultural

groupings, such as ‘Adivasis’, ‘tribal peoples,’ ‘hill tribes,’ or ‘scheduled tribes’ from the Asian perspective. They are referred to as ‘tribals’ in official documents in Bangladesh, despite the fact that they are described as ‘indigenous peoples’ or ‘aboriginal’ in accordance with section 97 of the SAT Act (1950) in the Act 12 of 1995 and Rules 6, 34, 45, and 50 of the Chittagong Hill Tracts (CHT) Regulation (1900).

Indigenous Traditional Knowledge:

Indigenous Traditional Knowledge (ITK), encompasses a wealth of insights, innovations, practices, and beliefs cultivated by indigenous communities across generations. This reservoir of knowledge is intricately woven into their cultural fabric, reflecting profound connections with their lands, waters, and the diverse array of living beings in their environment. This knowledge is not static; rather, it evolves dynamically through the continual interplay between human communities and their ecosystems. From diverse agricultural practices to intricate forest management techniques, indigenous communities in Bangladesh hold a wealth of traditional knowledge deeply rooted in their relationship with nature. This knowledge encompasses everything from sustainable resource management and natural medicine to food security and cultural practices. Unfortunately, these communities face challenges like land encroachment and rapid modernization, threatening the preservation of their invaluable knowledge. A traditional knowledge claim describes the use of a genetic resource through a specific preparation or process to achieve a desired end result or product consisting of 3 components:

1. Genetic resource: Any biological material used, like plants, animals, or microbes.
2. Preparation or process: The specific methods used to utilize the resource, often involving traditional techniques.
3. End result or product: The final outcome, such as a medicine, beverage, or cultural artifact.

Traditional Cultural Expression

Traditional Cultural Expressions (TCEs) are like a treasure trove of our shared human story. Think of lively dances, heartwarming songs, skillful handicrafts, captivating designs, meaningful ceremonies, and enchanting tales. They're not just art; they're the living pulse of a community's identity and history. To be considered a TCE knowledge claim, an expression should meet the following criteria:

1. Intergenerational Transmission: The knowledge and practices associated with the expression must be transferred from one generation to another, either through oral traditions, imitation, or other forms of transmission. This ensures the continuity and preservation of the TCE.
2. Reflection of Cultural Identity: The expression should reflect the cultural and social identity of the community. It should embody the values, beliefs, and traditions that make the community unique and distinct.
3. Characteristic Elements: The expression should contain elements that are characteristic of the community's heritage. This could include specific symbols, motifs, techniques, or styles that are unique to the community and distinguish its cultural expression from others.
4. Non-Commercial Purpose: While TCEs may have economic value, their primary purpose is not commercial. They are often created and practiced for religious and cultural reasons, serving as vehicles for spiritual expression, social cohesion, and community identity.
5. Constant Evolution: TCEs are not static entities. They evolve and develop over time, adapting to changing circumstances and incorporating new influences. This dynamic nature ensures the continued relevance and vitality of the expression within the community.

Knowledge Holders

Knowledge holders are the individuals or groups who possess and utilize specific Traditional Knowledge (TK) or Traditional Cultural Expressions (TCEs). They are often elders, specialists, or community members with deep understanding and responsibility for transmitting the knowledge.

1. Stakeholders are individuals or groups with a direct interest in the TK/TCEs. This could include the entire community, as well as researchers, government agencies, businesses, and NGOs, each with diverse interests ranging from cultural preservation to economic development.
2. Decision-making regarding the use or protection of TK/TCEs requires consulting all stakeholders, especially the knowledge holders and community. This ensures transparency, informed consent, and active participation in the process.
3. Origin of TK/TCEs can be internal or external. If the knowledge originated outside the community, it may not be subject to intellectual property rights and might be considered public domain. However, adopted knowledge can still hold cultural significance and warrant community rights.
4. Determining knowledge holders involves identifying individuals or groups with expertise, community recognition, and roles related to the specific knowledge or expressions. Community-based mechanisms and customary laws often play a crucial role in this process.
5. Ultimately, the decision-making power regarding intellectual property rights rests with the knowledge holders and the community. This ensures their rights and interests are protected and their cultural heritage is preserved.

Bio piracy:

The term 'bio piracy' describes the unethical and frequently unlawful exploitation of genetic material, biological resources, or traditional knowledge from developing nations or indigenous communities without the groups' permission or just recompense. The unapproved use or appropriation of biological resources or traditional knowledge without giving due credit to those who discovered or produced them is known as bio piracy. When businesses or individuals remove biological resources, such plants or animals, from their native habitat without the permission of the indigenous people who have been utilizing them for centuries, it is known as biopiracy. It can also occur when businesses or individuals patent or impose other restrictions on access to traditional knowledge produced by indigenous groups, such as agricultural methods or medical procedures. In an effort to combat bio piracy, legal frameworks like the previously mentioned Nagoya Protocol have been developed. Its goal is to guarantee the just and equal distribution of benefits resulting from the use of genetic resources.

Sui Generis:

Sui generis rights are alternative models that were created outside of the mainstream intellectual property system. Although it has long been believed that plant varieties and traditional knowledge are protected by such sui generis rights, the nature of the property that is being sought to be protected has resulted in very little change. TRIPS Article 27(3) allows countries to ban the patenting of animals and plants. This provision is also safeguarded by sui generis systems. The issue is in the lack of clarity surrounding the definition and enforcement of sui generis rights. Furthermore, it is still up for question whether industrialized nations and the WTO will agree on rights created by certain states. Taking into account that wealthier nations use trade penalties to force other governments to change. A viable strategy for meeting the particular IP requirements of traditional knowledge and traditional cultural manifestations is the use of sui generis rights. Sui generis rights have the potential to safeguard cultural heritage, strengthen communities, and advance sustainable development via acknowledging communal ownership, defending expressions, encouraging equitable benefit-sharing, and adjusting to various cultural situations. The protection of indigenous and local groups' intellectual property is greatly aided by sui generis rights, which are constantly developing as the globe struggles with concerns of equality, sustainability, and cultural preservation.

Prior Informed Consent (PIC):

In the context of environmental and cultural governance, prior informed consent (PIC) is an essential concept, especially with regard to the use of resources and knowledge that are connected to Indigenous populations. The idea highlights how crucial it is to have these communities' consent before beginning any activity that can have an impact on them or include using their traditional knowledge. PIC acknowledges that Indigenous communities have the right to information about proposed projects, an understanding of the possible effects, and the freedom to consent or not, free from compulsion. By guaranteeing that Indigenous communities have a

voice in decisions affecting their lands, resources, and traditional knowledge, this concept serves as the cornerstone for preserving the autonomy, cultural legacy, and self-determination of these groups.

Fair and Equitable Benefit-Sharing (ABS):

The goal of this concept is to make sure that the advantages of using genetic resources and related traditional knowledge are distributed in a fair and reasonable way. This idea recognizes that indigenous groups frequently possess important knowledge on the applications of flora, fauna, and other natural resources. The goal of ABS is to stop these resources from being used without just remuneration or recognition. It highlights the necessity of mutually acceptable conditions between the communities that supply the resources and the people that use them. Building courteous, enduring connections across diverse knowledge systems and stakeholders, honoring Indigenous knowledge, and advancing social justice are all possible through fair and equitable benefit-sharing. Fair and Equitable Benefit-Sharing is a way to honor Indigenous knowledge, advance social justice, and build respectful, long-lasting relationships between various knowledge systems and stakeholders.

THEORETICAL FRAMEWORK

Indigenous Knowledge Systems (IKS) Theory

A framework known as Indigenous Knowledge Systems (IKS) Theory aims to comprehend, record, and honor the distinctive knowledge systems of indigenous people. It acknowledges that these systems are holistic, including social, cultural, and spiritual aspects in addition to facts about the natural world. IKS Theory seeks to honor the autonomy and cultural context of indigenous knowledge while bridging the gap between it and Western scientific knowledge. One of the main objectives of IKS Theory is to incorporate Indigenous Knowledge Systems into more general debates, laws, and practices. It promotes the acknowledgement, validation, and respect of indigenous knowledge within an environment that values its distinct contributions and recognizes its continuous evolution and adaptability.

Decoloniality and Indigenous Knowledge Theory

It is a framework that critically examines the impacts of colonialism on indigenous knowledge systems and advocates for the decolonization of these systems. It challenges the dominance of Western epistemologies, which have historically marginalized, misrepresented, and in some cases, suppressed Indigenous Traditional Knowledge (ITK). This theory challenges the idea that Western knowledge is more important and tries to undo the power imbalances created by colonialism. It calls for a new approach to knowledge that breaks down the old ways of thinking and recognizes that Indigenous knowledge is just as legitimate and valuable as Western knowledge.

Ecological Knowledge and Resource Management Theory

According to the theory of ecological knowledge and resource management, indigenous tribes' deep knowledge of the ecological nuances of their surroundings is a useful asset for advancing sustainable resource management. The idea emphasizes the need to respect and learn from indigenous ecological wisdom for the benefit of local and global ecosystems, and it calls for the acknowledgment and integration of this knowledge into wider environmental policies and practices.

Indigenous Traditional Knowledge (ITK) Theory

Its practical application in resource management and ecological balance maintenance are the key areas of emphasis for Traditional Ecological Knowledge (TEK) Theory. The empirical and experiential character of indigenous knowledge is emphasized by TEK, which draws on generations of ecological system-related observations, experiments, and adaptation. TEK Theory highlights the useful and applied components of indigenous knowledge, stressing its importance in maintaining biodiversity, supporting resilience in the face of environmental change, and maintaining ecosystems. It acknowledges the need of gaining knowledge from indigenous cultures' collected experience for the good of regional and global ecological systems.

Intercultural Knowledge Exchange and Co-Production Theory

The goal of the Intercultural Knowledge Exchange and Co-creation Theory is to integrate Western scientific knowledge with Indigenous Traditional Knowledge (ITK) in order to promote an egalitarian and inclusive approach to knowledge creation. This theoretical framework seeks to reduce cultural divides and encourage co-production of knowledge by promoting cooperation, mutual understanding, and respect amongst various knowledge systems.

ANALYTICAL FRAMEWORK

Data Type

This study is qualitative in nature. Moreover, it may be applied to obtain comprehensive understanding of an issue or to provide fresh research concepts. The meanings, conceptions, definitions, traits, metaphors, symbols, and descriptions of objects are the focus of this type of inquiry rather than their "counts or measures." Rather than focusing on the frequency of a phenomena, this research looks into the causes and mechanisms behind it. Qualitative research methods are widely used in academic institutions, with a focus on the human aspects of the social and scientific sciences.

Data Source

Secondary material gathering and analysis include looking for and reading books, journals, reports, government documents, working papers, and websites pertinent to the problem at hand. Furthermore, this individual effort was based on material obtained from Research Gate, Springer, Google Scholar, and other publicly available sources that met the criterion of being internet accessible and published in English. Furthermore, publications from Sage, Study Gate, Springer, Google Scholar, and Web of Science are assessed in order to meet the research purpose.

Data Collection Process

First, I did a thorough search on Google and other research engines, including Research Gate and Google Scholar, for my complete topic. I attempted to learn about the most recent study that has been conducted by doing this. I next used the keywords related to the issue in the search engines stated above to arm myself with every topic that was connected to my thesis, both directly and indirectly. All the required books, periodicals, and newspaper articles that are pertinent to my study have been gathered and collated, and I have carefully studied each one of them one at a time. I next eliminated any publication that did not relate to my study aim by using the elimination technique.

Data Interpretation Technique

This paper employs both theoretical analysis and comparative legal research to examine road safety laws in Bangladesh. The doctrinal approach involves exploring legal theories and concepts found in cases, laws, and judgments. The interconnectedness of statutory laws, international guidelines, and common law principles is considered in proposing reforms for the Bangladesh Legal System. Primary sources like legislation and case law, along with secondary sources such as scholarly works and reports, are utilized. Despite a focus on primary sources and academic publications, a select number of national dailies are used for crucial information. The thesis analyzes current road safety laws in Bangladesh, identifies existing problems, and proposes reforms for the legal system.

CONCLUSION

The aforementioned definitions and theories offer significant frameworks for comprehending the intricate characteristics of Indigenous Knowledge (ITK), its importance in indigenous societies, and its potential benefits for several domains such as ecology, sustainability, and cultural conservation. ITK and related theories

provide important insights and direction as the globe struggles with environmental issues and looks for more inclusive and equitable knowledge system.

Traditional Knowledge and Indigenous Community

Introduction

Traditional knowledge (TK) is a broad and all-encompassing term that encompasses the abundance of information, inventions, and customs that local and Indigenous groups have developed over many generations as a result of their close relationship with nature. Indigenous identity is fundamentally shaped by their traditional knowledge, which reflects a comprehensive and interrelated worldview. Its link to Indigenous peoples is profound and sacred, encompassing a bond with the land, culture, and community that goes beyond practical applications. Fostering a more inclusive and long-lasting approach to collaboration between Indigenous and non-Indigenous communities requires acknowledging and honoring traditional knowledge.

Key Aspects Of Indigenous Traditional Knowledge:

The information provided by the Indigenous community is embedded in their traditional knowledge, which has been developed over time and continues to evolve based on experience and adoption to the local environment and culture. This helps the community and its culture survive and preserve the general resources required for their continued existence. It could contain all the details on different animal breeds, regional flora, crops, tree species, textile patterns, methods, and technology, as well as customary cultural expressions.

Cultivation

Jhum cultivation is a traditional agricultural method used in Bangladesh's Chittagong Hill Tracts (CHT). It is ingrained in indigenous tribes' Indigenous Traditional Knowledge (ITK) and has been used for millennia. ITK is crucial to preserving sustainable Jhum cultivation practices in Bangladesh. In addition, "Jhum" farming is practiced by tribal populations, which involves one year of crops followed by four to five years of fallow to revitalize the soil. A variety of crops, including rice, ginger, cucumbers, chiles, and turmeric, can be grown thanks to this cycle. In the Chittagong Hill District, tribal farmers grow more than forty different types of crops, and women gather about fifty different kinds of wild plants. Their everyday needs are met by this varied cultivation, and many of the crops grown under the "Jhum" system—cereals, spices, aromatic plants, medicinal plants, and legumes—have the potential to be valuable commercial products..Sapwood Teak – contained with large verities of complex aromatic extractive which acts against fungi or mycobacterial attack -also comes from the cultivation of this indigenous community.

Fuel Wood

Tribal people gather a variety of fuel wood species in the Bandarban Hill District between January and February so they may use it for the full year. These woods are kept in "machang," which are little homes. The tribe prefers the white-colored, straight-grained wood of the Kom (*Nauclea sessilifolia* Roxb.), Dharmara (*Stereospermum personatum* Chatterjee), Rong Kat (*Mitragyna parviflora* Roxb. Korth), Bura (*Macaranga denticulata* (BI) Muell.Arg.), and other significant species. These wood species are prized for their slow-burning, effective characteristics, which make them excellent fuel wood.

Land Use planning

In the Bandarban Hill District, community members consider the hilly landscape when planning land use.

They employ zoning, dividing the land into three categories: villages (para), farming sites (Jhum), and fallow Jhums or Raiyna. The choice of land use depends on factors like soil texture, color, hydrological patterns, and plant communities. In the Bandarban Hill District, community members consider the hilly landscape when planning land use. They employ zoning, dividing the land into three categories: villages (para), farming sites (Jhum), and fallow Jhums or Raiyna. The choice of land use depends on factors like soil texture, color, hydrological patterns, and plant communities.

Traditional Medicines

Although still widely used, Bangladesh's traditional medical system is in danger because deforestation reduces the amount of medicinal plants that are available. Numerous of these plants are essential to the jobs of traditional practitioners. People's views of healthcare have changed as a result of the introduction of Western medicine to remote locations. Younger people have a tendency to trust contemporary medical professionals more than conventional herbalists like "Kabiraz," whom they frequently consider to be out of date. Bangladesh's market for herbal medicines is estimated to be worth Taka 3,300 million, or around \$60 million, and is expanding at a rate faster than the allopathic sector's 10% growth. At the moment, most people who use herbal medications live in rural regions. The herbal medicine business thinks that urban customers are more interested in allopathic treatments that are rapid and symptom-focused than in herbal therapy's holistic, long-term approach. This illustrates how healthcare tastes are evolving due to a variety of circumstances, including urbanization and the impact of Western medical methods.

Indigenous Traditional Songs

In Bangladesh, indigenous traditional songs showcase rich diversity, with notable types including Jhumur songs linked to traditional agriculture practices. These are sung during festivals, narrating tales of love and life challenges in the hills. Shamong songs, associated with the Shahong people, praise forest spirits with intricate melodies. Mangshi songs of the Mangshi community accompany dances with lively rhythms. Goru songs celebrate cattle-rearing practices, expressing gratitude for their contribution to indigenous communities. - These are known as indigenous folk songs. Each song type reflects unique cultural and thematic elements in the country's indigenous music landscape. These songs serve as repositories of stories, traditions, and beliefs, passing down cultural knowledge from one generation to the next. However, these songs face challenges due to modernization and cultural shifts. To address this, efforts are being made to conserve indigenous traditional songs through documentation, preservation initiatives, community engagement, and cultural education programs. By documenting and preserving these songs, engaging indigenous communities in the process, and promoting cultural education, Bangladesh aims to ensure the continued vitality of its rich indigenous musical heritage for future generations.

Indigenous fishing knowledge

Indigenous traditional fishing methods have deep roots in Bangladesh, offering sustainable and culturally significant practices that endure to this day. Techniques such as Jag fishing, Dhank fishing, Bait casting, Cast net fishing, and Fish trap methods utilize bamboo or lightweight materials to catch fish without causing environmental harm. These traditional methods are sustainable and environmentally friendly, avoiding the use of harmful chemicals or large-scale fishing. They not only provide an effective source of food for indigenous communities but also play a crucial role in preserving cultural heritage. By supporting and promoting these traditional fishing methods, Bangladesh aims to ensure the continuation of these culturally rich practices while maintaining a harmonious relationship with the environment.

Identification of Indigenous Traditional Knowledge (Tk) and Traditional Cultural Expressions (Tce)

(TK) is woven into everyday activities such as farming, animal care, and spiritual rituals. Although primarily passed down orally, alternative forms of documentation include maps, drawings, and carvings. Individuals like NGO researchers and academics actively collect TK, and it is additionally conserved in secondary sources like journal articles and museum exhibits. The purpose of this identification is not to make TK and TCE disappear and maintained and propmoted.An important facet is the knowledge claim, eligible for intellectual property protection, encompassing genetic resources, the preparation or process, and the resulting Product.

1. **Genetic Resource:** The biological or genetic material that forms the basis of traditional knowledge is referred to here. It could consist of flora, fauna, or other natural resources.
2. **Preparation or Process:** This involves the traditional methods, techniques, or processes used to derive knowledge or products from the genetic resource. It encompasses the traditional practices employed by a community to utilize or transform the resource.

3. **End Result or Product Derived:** This component relates to the final outcome or product obtained through the traditional preparation or process. It could be a specific medicine, a unique artifact, or any tangible or intangible creation resulting from the application of traditional knowledge.

In the journey of handling a claim related to Traditional Knowledge (TK) or Traditional Cultural Expressions (TCEs), the subsequent steps involve identifying the knowledge holders and stakeholders. The distinction lies in knowledge holders being those actively possessing or utilizing the knowledge, while stakeholders are individuals within a community holding a direct interest in the TK or TCEs. When decisions loom over a specific claim, whether by a public agency or a socially responsible private company, it is paramount to engage in consultation with all stakeholders, often encompassing the entire community. This inclusive dialogue is pivotal before arriving at conclusions on how intellectual property rights should be applied.

Either the community itself produces TK or TCEs, or they are brought by other sources. Intellectual property rights may not apply to knowledge or expressions that are not native to the community; instead, they may already be in the public domain. On the other hand, if the TK or TCEs are native to the community, the next step is to identify the knowledge bearer. This person, group of people, or the community as a whole could be this person. After then, the emphasis switches to determining who has access to or uses those TKs or TCEs.

Knowledge claims can be held by people, groups, or even organizations outside of the community. The knowledge and participation of persons with the TK or TCEs determines the possible paths for intellectual property rights. Based on these criteria, this categorization may be reduced to three groups: (a) known and used by a person; (b) known and utilized by a community or many individuals; or (c) dispersed widely and in the public domain.

Conservation and Protection Procedure of Natural Resources in Bangladesh

In the picturesque hill districts of Bangladesh, a noteworthy tradition thrives — the "Para Reserve or Mouza Reserve," a communal treasure meticulously conserved by tribal communities. This reserve, a shared asset among the villagers, stands as a testament to their commitment to natural resource management. Notably, timber extraction for communal purposes, be it for constructing schools or churches, is strictly regulated. No timber can be harvested without the explicit approval of the tribal village community, fostering a sense of collective responsibility.

Individuals within the tribal community are granted permission to extract a limited quantity of timber or bamboo strictly for personal use, emphasizing a balanced approach to resource utilization. Importantly, any commercial exploitation of timber or bamboo is unequivocally forbidden by the tribal community, underscoring their dedication to sustainable practices.

The roots of this conservation system trace back to an elder-based structure, where tribal communities safeguarded biological commodities surrounding their homes. Elders managed these resources in alignment with religious and traditional beliefs, showcasing a harmonious coexistence with the environment.

In contemporary times, the appointment of the Headman, facilitated by the Deputy Commissioner under the Chittagong Hill Districts Act, 1989, signifies a modernized governance approach while upholding the essence of tribal heritage and responsible resource management. This multifaceted system not only meets the people's needs but also stands as a living example of how tradition and sustainability can coalesce in the Chittagong Hill Districts of Bangladesh.

Nature And Purpose of Protection

TK can be defined as a body of knowledge that has been passed down through generations, continuously refined and augmented, akin to the incremental improvement seen in modern scientific processes. The term emphasizes the living, functional nature of these traditions rather than considering them mere relics of the past. This vast body of knowledge includes songs, dance styles, literary, artistic, and scientific works as well as medical and agricultural technology and methods. Traditional knowledge and folklore have been defined in a

variety of ways, but none of them have been deemed universally accepted, in part because of their broad nature.

Protection of traditional knowledge raises debates, as the term shouldn't be directly equated with its use in intellectual property (IP) contexts. WIPO's fact-finding missions summarized concerns of traditional knowledge holders, highlighting issues such as the loss of traditional practices among younger community members and a lack of respect for traditional knowledge.

In Bangladesh, recent efforts, including the Convention on Biological Diversity and the Government's initiatives, aim to safeguard traditional knowledge related to plant species. However, challenges persist, including the need for legislative frameworks. Concerns include misappropriation of traditional knowledge without benefit sharing, derogatory use, and a lack of recognition for the necessity to preserve and promote its continued use. These discussions underscore the importance of respecting and preserving traditional knowledge in the face of evolving societal and legal landscapes.

CONCLUSION

The protection of indigenous traditional knowledge serves broad and interconnected purposes, encompassing cultural preservation, community empowerment, environmental sustainability, economic and social justice, and the fostering of respectful global collaborations. By safeguarding this wealth of wisdom, practices, and heritage, efforts aim to empower indigenous communities, contribute to environmental conservation, promote biodiversity, ensure economic fairness, facilitate inter-generational knowledge transfer, and enrich the global tapestry of diverse knowledge systems.

National & International Legal Framework on Indigenous Traditional Knowledge

Introduction

Indigenous Traditional Knowledge (ITK) is a wealth of knowledge that has been down through the centuries and is an integral part of the cultural heritage of indigenous people all over the world. The legal frameworks around ITK become crucial as the world community struggles to maintain cultural variety and foster innovation. This investigation aims to disentangle the intricacies and subtleties that influence the preservation, acknowledgment, and fair dissemination of Indigenous Traditional Knowledge by exploring the national and international aspects of the legal environment.

Conventional Ip Protection

Indigenous Traditional Knowledge (ITK), which is firmly ingrained in the cultural legacy of indigenous groups, is a diverse tapestry of wisdom. Conventional frameworks provide a prism through which ITK protection is investigated as the global conversation on intellectual property (IP) develops. This section explores the potential and problems that come with using conventional intellectual property laws to protect ITK.

Patent Protection

In Bangladesh, the Department of Patents, Designs, and Trademarks issues certificates for inventions or innovations under the Copyright Act, 2000. This protection lasts for 16 years if the invention meets criteria such as novelty, inventive step, and industrial application.

Novelty requires that the invention is entirely new with no prior art. Traditional Knowledge (TK), being transmitted over generations, may not fulfill the novelty requirement. However, defensive protection can be achieved by strategically including TK in the prior art. The Draft Bangladesh Patent Act 2019 addresses this by explicitly providing for defensive protection. Patent protection does not apply to innovations derived from traditional knowledge or mixtures of traditionally known substances, according to Section 4(1)(o). The recently passed law on patents provides clearer guidelines on what can be patented. According to Section 5 of

the new Act, certain things are exempt from being patented. These include plants and animals (excluding microorganisms), along with biological processes necessary for producing plants or animals and their parts (except inorganic and microbiological processes). Notably, traditional knowledge and innovations originating from traditional knowledge or a combination of the two are also explicitly excluded from eligibility for patent protection under Section 5. This means that inventions based on traditional knowledge cannot be granted patents under the new law. Any interested party may file an application under Section 16 for the revocation of a patent if the invention uses components that have been copied from conventional knowledge.

Mechanical advancements pertaining to traditional treatments, such as Ayurveda and herbal remedies developed by Indigenous communities, can be protected by TK patents in Bangladesh. This covers procedures including chilling, drying, combining, cleaning, and shaping components for use in herbal brews. Nevertheless, there are restrictions on patent law. Under international agreements such as the TRIPS Agreement, protection is limited to 20 years, and patent applications entail exposing knowledge to the public after a specified period. It is protected for 16 years in Bangladesh, and that period can be extended for an additional 10 years by petitioning the government. The use of patent law to safeguard biodiversity and related traditional knowledge is hampered by the strict requirements, which include innovation and creative actions..

Copyright Protection

This right is given to the author of tangible artistic and creative expressions, including theatrical, musical, literary, and artistic works or educational forms. In Bangladesh, the Copyright Act of 2000 establishes a protection period of 60 years plus the life of the author. This law safeguards original works, including literary pieces (such as myths, tales, and songs), theatrical performances, musical compositions, An author's lifetime plus sixty years is the protection period stipulated under Bangladesh's Copyright Act of 2000. The original works are protected by this legislation, which also includes literary works (such as stories, tales, and songs), artistic creations (such as sculptures, pottery, and ceramics), musical compositions, theatrical productions, and textile works (such as clothing, textiles, and carpets) of indigenous community.

It is important to remember that copyright protection does not need official registration. The Copyright Act of 2000 recognizes collective ownership but only gives exclusive rights to individual producers, so eliminating the creative contributions of local and indigenous populations from copyright protection.

Although "folk knowledge" is not specifically recognized by Bangladesh's Copyright Act of 2000, the draft Copyright Act of 2019 adopts a more inclusive stance. The skills, knowledge, and culture that are passed down through generations orally, in writing, or by other ways are referred to as "folk knowledge" in this proposed law. Folk expressions' material and immaterial components are seen as components of folk culture. This term goes so far as to encompass the ethnic minority's culture in Bangladesh.

The proposed Act is unique in that it takes a proactive approach to safeguarding representations of folklore. In particular, it forbids the use of folk knowledge or folk culture, guaranteeing these manifestations' indefinite protection. This indicates that Bangladeshi indigenous artists would be able to obtain royalties from others who utilize their works under the terms of this Act. Essentially, the proposed Copyright Act of 2019 creates a framework for recognizing and preserving the cultural legacy of the nation's indigenous people while also expanding the extent of protection.

Trademark Protection

Trademarks are essential for safeguarding brand names, emblems, and signs because they keep customers from being confused about identical items from several vendors. Trademarks in Bangladesh are defined under the Trademarks Act of 2009, which includes "registered marks" and "service marks" associated with the sale of products. By filing an application to the Registrar, anyone can get trademark protection as long as their mark is unique and not deceptive. In contrast to patents, trademark registration provides protection for the first seven years and, with payment of authorized costs, an infinite renewal every 10 years.

If certain usage conditions are met, even well-known unregistered trademarks can get protection. For example, a passing off action may allow a claim of trademark TM for products or service mark SM for services. When it comes to protecting symbols or signs linked to products and services offered by local or indigenous people, trademarks are an invaluable resource. This enables these communities to profit financially from the sale of traditional knowledge (TK) items, even in the absence of patents, by using registered or claimed marks on such TK products.

Furthermore, certification marks—a special kind of trademark—can shield the methods used by an indigenous community to produce traditional knowledge items. Additionally, items from a registered organization or local community are protected by collective marks. In the wine and spirits industry, countries such as France, South Africa, Peru, and Chile employ collective marks efficiently. Collective marks, with ownership vested in the community and usage rights granted to all members, can be used in Bangladesh to safeguard the group's traditional knowledge. When compared to the restricted protection offered by patents and copyrights, trademarks prove to be a powerful instrument that give broad protection for an extended period of time.

Trade Secrets Protection

A trade secret is a type of intellectual property that refers to confidential information that provides a business with a competitive advantage. Unlike patents, trademarks, or copyrights, trade secrets are not publicly disclosed. Trade secrets serve as a protective mechanism for traditional knowledge, ensuring safeguarding as long as the knowledge remains confidential. This safeguarding relies on the secrecy of the knowledge, coupled with its commercial value and absence from the public domain. Notable examples, such as the closely guarded formula of Coca Cola beverages, exemplify the effectiveness of trade secrets in granting sole control over goods or products. The trade secrets system gives those with access to holy and secret traditional knowledge—such as healers or experts in a field—the ability to keep their information private and prevent others from learning it. Contract law rules govern whether trade secrets can be enforced in Bangladeshi courts. It is important to remember, nevertheless, that traditional knowledge cannot be protected as a trade secret once it is made public. In these situations, the knowledge can be used and reverse-engineered by everyone.

With certain firms, indigenous groups can set up royalty agreements that allow them to share expertise while maintaining anonymity. This agreement between the parties guarantees that the business cannot release knowledge without the consent of the traditional knowledge holders. Native American tribes and traditional healers that use plants as medicine are especially prone to this practice. The procedures for royalty's payment do not change, even if the information is finally made public.

A notable legal case, such as the 'Listerine' formula case, involved an antiseptic mouthwash developed by J.J. Lawrence. Despite the formula being published and entering the public domain, the court ruled that due to the trade secret licensing, the pharmaceutical corporation was obligated to continue royalty payments according to the agreement. This underscores the resilience of trade secret protections even in the face of public disclosure.

Geographical Indication Protection

Geographical Indications (GIs) emerge as a unique facet of intellectual property protection, extending safeguards to products rooted in specific geographical origins. This protection hinges on the distinct qualities, reputation, or other defining characteristics linked to the geographical locale, irrespective of the origin of raw materials. Within the realm of GIs, establishing a connection between products and their geographic roots allows for claims that can empower communities adhering to traditional production methods.

The role of GIs in protecting products intricately tied to traditional knowledge (TK), such as indigenous handicrafts and agro-food items, holds particular significance for nations like Bangladesh. GIs, serving as a viable mechanism to preserve cultural heritage, align with the mandates outlined in the TRIPS Agreement. Bangladesh has duly responded to this mandate of article 22(2) (a) under TRIPS agreement by establishing the Geographical Indications (Registration and Protection) Act, 2013.

This legislation extends protective measures to both GIs (signifying goods with recognized geographical origin and reputation) and Appellation of Origin (representing goods sourced from a reputable location with specific raw materials). Registration under this Act ensures legal acknowledgment, and intriguingly, even unregistered GIs can find protection if their geographical origin can be traced. The Act encompasses a broader protective scope, including homonymous GIs.

While GIs offer enduring protection tied to the maintenance of traditional quality and reputation, it's crucial to discern that their protective ambit extends to the names of traditional products rather than the intricate underlying knowledge or technology. GIs, viewed as a valuable supplementary tool, acknowledge the pragmatic challenges inherent in safeguarding the diverse forms of TK through a singular intellectual property protection mechanism.

Protection Through The Convention On Biological Diversity (Cbd) And Nagoya Protocol

The CBD, or Convention on Biological Diversity, stands as a key global agreement explicitly recognizing the pivotal role of Traditional Knowledge (TK), along with innovations and practices of Indigenous and local communities, in fostering biodiversity conservation and sustainable development. This treaty involves multiple countries, with Indigenous and local communities being subjects rather than participants. The acknowledgment of Indigenous or traditional knowledge and technologies is specifically embedded in Articles 17 and 18 of the CBD. While the term 'traditional knowledge' may not be expressly used, Article 8(j) implies the recognition of the knowledge held by Indigenous and local communities. Article 8 of the CBD emphasizes that the knowledge, innovations, and practices embedded in the lifestyles of Indigenous Peoples significantly contribute to the conservation of biodiversity and the sustainable use of natural resources.

For Indigenous Peoples, the conservation, management, and preservation of biodiversity carry immense importance. This is evident in the development of knowledge that is passed down through generations, forming an integral part of environmental conservation efforts. Furthermore, TK plays a crucial role in generating information for industries like pharmaceuticals and biotechnology, particularly in fields such as medicine and agriculture. The CBD recognizes states' sovereign rights over natural resources inside their boundaries as an international agreement among nations. Although governments have authority over genetic resources inside their borders, this sovereignty does not include ownership rights over the knowledge that goes along with it. This information is frequently possessed by indigenous and local groups, and it is the state's responsibility to protect their rights by ensuring a just and equal distribution of the advantages that result from using that knowledge.

Significant advancements in the CBD have been made possible by the Conference of the Parties. One such step forward was the acceptance of the voluntary Akwé Kon Guidelines. Furthermore, to assist parties in putting the CBD's access and benefit sharing (ABS) provisions into practice, an ad hoc open-ended working group on the subject was formed to provide recommendations and other strategies. In order to support parties in developing legislative, administrative, or regulatory actions pertaining to ABS, as well as in drafting contractual agreements for benefit sharing and access to genetic resources, the Bonn Guidelines were approved.

The Nagoya Protocol, in various provisions, mentions Indigenous and local communities. While the terms 'Indigenous' and 'local communities' are undefined in the CBD and the Protocol, the Protocol's preamble refers to the Declaration on the Rights of Indigenous Peoples. Although states are primarily obligated under the Protocol, Indigenous and local communities have domestic rights regarding access to genetic resources and holding Traditional Knowledge. According to Article 7 of the Protocol, a state party should, "subject to national legislation," ensure the prior informed permission or agreement and engagement of Indigenous and local people, setting mutually agreeable parameters for benefit sharing from the use of genetic resources.

The Nagoya Protocol, part of the CBD, acknowledges the role of Indigenous and local communities in biodiversity conservation. While the CBD recognizes states' sovereign rights over natural resources, it obliges states to guarantee fair and equitable benefit-sharing for Indigenous and local communities holding traditional knowledge (TK). The Protocol focuses on Access and Benefit-Sharing (ABS) and endorses voluntary

guidelines like the Akwé Kon Guidelines. It emphasizes prior informed consent for communities and encourages states to involve communities in developing protocols. The Nagoya Protocol, adopted in 2010, ensures appropriate access to genetic resources and technologies, considering rights over these resources and technologies. The concept of 'biocultural rights' signifies a novel set of rights that encompass the rights of Indigenous and local communities. These rights pertain to holding and accessing traditional knowledge (TK) related to genetic resources and ensuring fair benefit-sharing from its utilization. The idea takes a holistic approach, emphasizing the intricate connection between Indigenous rights, natural resources, and cultural rights. These rights fall under the category of group or collective rights and are integrated into legal frameworks like the UN Declaration on the Rights of Indigenous Peoples (UNDRIP). However, it appears that implementing biocultural rights under the CBD framework will be challenging due to the differences in country legal systems. The Nagoya Protocol addresses this by encouraging communities to develop community protocols. Bangladesh is required to abide by the 2010 Nagoya Protocol, which is an additional non-binding agreement, in addition to the CBD.

Protection Through Access And Benefit Sharing (Abs) Scheme And Prior Informed Consent

The Access and Benefit Sharing (ABS) program was created by the CBD and the Nagoya Protocol with the aim of controlling access to genetic resources and related Traditional Knowledge (TK). The development of benefit-sharing from TK usage with indigenous tribes and local peoples is emphasized by the CBD. In addition, the Nagoya Protocol requires disclosing the advantages of its usage to TK holders and gaining their prior informed permission.

To create an ABS system specifically for Bangladesh, the Bangladesh Biological Diversity Act, 2017 was passed. The Act seeks to control the unlawful use of genetic resources, guard against theft, and guarantee just and equitable benefit-sharing. Notably, if the innovation depends on research or data pertaining to a biological resource from Bangladesh, the Act expressly forbids seeking for any IP property without first obtaining clearance from the National Biodiversity Committee. Such proposals may be approved by the National Biodiversity Committee, which may also set particular benefit-sharing or royalties, or both. It could also include terms or guidelines for dividing the profits earned from the commercial use of these intellectual property rights.

Only the first of the six options for equitable benefit-sharing—Prior Informed Consent, or PIC, and Mutually Agreed Terms, or MAT—includes significant international processes as stipulated by Bangladesh's Biological Diversity Act of 2017. This does not meet the CBD's and the Nagoya Protocol's requirements. Adjustments are required to guarantee equitable benefit-sharing, comply with international norms, and acknowledge and defend the rights of indigenous groups. Benefit-sharing is defined as the practice of giving the breeder a share of the advantages derived from plant varieties under Section 23(1) of the Plant Variety Protection Act of 2019 in Bangladesh. This Act emphasizes that the farming community, recognized as the claimant, has the right to request such benefits. Failure to provide enough evidence of the farmer's involvement in breeding a particular variety may result in denial of protection under this Act. The protection period for plant varieties, according to the Act, ranges from 14 to 16 years. . The Act creates the "Plant Variety Protection Authority," a legislative body, to supervise and guarantee that farmers may reap the advantages of using plant genetic resources. This authority is responsible for managing and ensuring fair benefit-sharing arrangements related to plant varieties.

Protection Through Sui Generis Law

The efforts made by countries like India, Brazil, Portugal, Peru, and the Philippines to address the inadequacies of the existing intellectual property rights (IPRs) regime in protecting traditional knowledge (TK) reflect a global recognition of the unique challenges posed by safeguarding the cultural heritage of indigenous communities .These countries have pioneered a model known as the 'defensive community patent' model, which involves tailoring certain aspects of the IP system to accommodate the distinctive nature of TK. This approach seeks to establish a separate system for the protection of traditional knowledge.

Globally, diverse sui generis legislative models exist, each designed to tackle the complexities of safeguarding cultural expressions and knowledge. For instance, the 'Model Provisions for National Laws on the Protection

of Expressions of Folklore against Illicit Exploitation and Other Prejudicial Actions' sets out principles and conditions for protecting expressions of folklore, encompassing those originating from foreign communities. Similarly, the 'Principles and Guidelines for the Protection of the Heritage of Indigenous People' emphasizes the recognition of indigenous peoples as the primary custodians and interpreters of their arts, sciences, and civilizations.

Several non-legal and voluntary models, such as the 'Third World Network's Proposal for a Rights Regime for the Protection of Indigenous Rights and Biodiversity,' the 'Intellectual Integrity Framework of the RAFI,' the 'Model Biodiversity Related Community Intellectual Rights Act of the Research Foundation for Science, Technology and Ecology,' and the 'Draft Legislation on Community Rights and Access to Biological Resources developed by the OAU,' offer guidelines and suggestions for TK protection. While not mandatory, these models contribute to the global conversation on safeguarding traditional knowledge.

Costa Rica's *sui generis* system provides an intriguing perspective, suggesting that traditional knowledge can be protected even without exhaustive documentation. This approach underscores the importance of aligning any *sui generis* mechanism with the customary laws of indigenous people for effectiveness. Bangladesh's commitment to creating a special legislative framework, exemplified by the Biodiversity Act, demonstrates a proactive stance in preserving genetic resources and indigenous knowledge related to biodiversity. The *sui generis* modality, in this context, refers to a unique and tailored legal framework that combines various standard practices of intellectual property protection to address specific needs.

In the realm of protecting genetic resources and traditional knowledge, a country may opt for a comprehensive approach, integrating different mechanisms. This could involve providing patent protection for inventions, using Plant Varieties Certificates (PVC) to safeguard plant varieties, and adopting legal frameworks, like Peru's, to invalidate improper patents. Peru's *sui generis* approach includes a wide array of safeguards, ranging from trade secrets and licenses to registrations, competition law, and defense protection principles. This multifaceted strategy showcases the complexity and depth required in addressing the nuanced issues surrounding traditional knowledge protection. Bangladesh took the first step toward creating a unique legal framework for the preservation of genetic resources and biodiversity-related traditional knowledge (TK) when it passed the Biological diversity Act in 2017. Besides The Biodiversity and Community Knowledge Protection Act 1998 and Plant Varieties Act 1998 are trying to be enacted to give protection to Indigenous Traditional Knowledge. In Bangladesh, the rights of indigenous groups over their biological resources and traditional knowledge (TK) are not recognized under the Biological Diversity Act of 2017. Rather, authority is delegated to a bureaucratic committee (NCB) that lacks legal validity. Any anyone, citizen or not, must first receive clearance from the NCB before applying for a patent or other intellectual property rights (IPRs) for any innovation derived from Bangladesh's biological resources. Any such application rejection must have a reasoned explanation, and rejections are appealable. The statute refers to indigenous communities as "local communities or people," not acknowledging them. The rights of these indigenous tribes, who are mostly forest dwellers, to their ancestral lands and to utilize forest resources are not acknowledged.

Protection By Tk Digital Library (Tkdl) Models

The purpose of the Traditional information Digital Library (TKDL) is to prevent unapproved use of traditional information. By digitizing conventional knowledge and making it available to patent examiners for future claim reviews, it functions as a non-legal process. By releasing the information into the public domain and undermining claims of uniqueness in patent applications, this strategy seeks to stop others from getting patents.

For Instance an indigenous community from the Chittagong Hill tracts of Bangladesh shares information about a medicinal plant's healing abilities with the TKDL. However, if an outsider gains access to this information and creates an entirely new drug that meets the criteria for novelty and inventiveness, they could potentially obtain a patent for the drug. This double-edged nature arises because while the TKDL aims to prevent the grant of patents based on traditional knowledge, it also makes the information easily accessible. If an individual uses this accessible information to develop a genuinely novel invention, they may be entitled to patent protection. Therefore, the TKDL model, while serving as a defensive mechanism against unauthorized use of traditional

knowledge, needs to carefully balance openness and protection to avoid unintended consequences and potential misuse of the disclosed information.

India has successfully employed the TKDL format as a defensive protection strategy, winning numerous claims on international patents, including those related to the use of turmeric and neem. Other countries, such as Korea and China, have introduced similar digital databases, such as the Korean Traditional Knowledge portal (KTKP) and the Chinese Traditional Medicine (CTM) patent database system, respectively.

Human Rights Based Approach For The Protection Of Indigenous Traditional Knowledge

International human rights instruments support Indigenous Peoples' control over their Traditional Knowledge (TK), particularly when it holds special cultural significance. Recognizing the importance of TK in conserving biological diversity and genetic resources, international law acknowledges its special cultural significance for Indigenous communities. The core of Indigenous identity is tied to cultural phenomena with both material and non-material values. Protecting TK aligns with cultural human rights, providing both 'moral' and material rights for Indigenous communities.

Legal Mechanism under Human Rights Law

To safeguard TK, the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) proposes a co-management regime through partnerships between states and Indigenous communities. Although not strictly binding, the UNDRIP holds diverse legal significance. The International Labor Organization Convention No 169 (ILO 169) is a legal agreement established in 1989 that specifically applies to Indigenous and tribal Peoples in independent countries. Although Indigenous Peoples are not specifically granted the right to engage in the use, management, and protection of natural resources on their territory, ILO 169 does (Article 15). Additionally, it affirms their control over their economic, social, and cultural development (Article 7). These rights are understood to be exercised in alignment with Indigenous customary norms, which inherently involve Traditional Knowledge practices. As a part of the International Labor Organization Convention, Bangladesh is obligated to uphold obligations for protecting Indigenous Traditional Knowledge (ITK). The International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social, and Cultural Rights (ICESCR), both legally binding instruments, emphasize the collective component of individual rights. While not explicitly mentioning 'traditional knowledge,' these instruments include TK as part of the cultural rights of minorities, particularly in the context of Indigenous Peoples. The Human Rights Committee (HRC), which oversees the implementation of the International Covenant on Civil and Political Rights (ICCPR), has highlighted in its General Comment No. 23 that culture takes various forms. For Indigenous Peoples, this includes a unique way of life associated with using land resources, like traditional activities such as fishing and hunting, along with specific techniques related to how they use and interact with the land. The General Comment emphasizes the importance of recognizing and respecting these cultural aspects, particularly within Indigenous communities. In 2000, Bangladesh too became a member of the ICCPR. Bangladesh has, however, expressed various concerns and limitations about the ICCPR's applicability. In a same vein, Bangladesh recognized its constitutional commitment to human rights by ratifying the ICESCR and a few other agreements in 1998.

Reason of Failure of Implementation

The human rights framework faces limitations concerning the protection of Traditional Knowledge (TK) rights for Indigenous Peoples. Firstly, while various UN treaty bodies acknowledge TK as a form of cultural right, the human rights regime lacks a mechanism for either affirmatively or protectively recognizing it. Establishing Indigenous Peoples' ownership of TK as a cultural right is challenging due to its subjective nature. There are no standardized inventories defining the specific and identifiable knowledge requiring protection, and it's unclear who may exercise such rights on behalf of an Indigenous group, or how. Consequently, the existing human rights framework does not adequately support the protection of TK as a concrete fundamental right applicable to Indigenous Peoples.

CONCLUSION

Indigenous traditional knowledge (ITK) is a complex tapestry of expertise that has been passed down through the centuries, ranging from appreciating and exploiting biodiversity to creating remedies and cultural expressions. However, a strong legal framework is needed, both domestically and internationally, to preserve and uphold this information.

Challenges and Prospects of Indigenous Traditional Knowledge

Introduction

In the quest to safeguard Traditional Knowledge (TK), Bangladesh encounters a landscape rich in challenges and ripe with prospects. In this intricate terrain, the nation grapples with the dual responsibility of protecting TK and fostering an environment where it can flourish. Recognizing these challenges not as obstacles but as opportunities for innovation and collaboration becomes the cornerstone of Bangladesh's journey toward a sustainable and culturally sensitive future.

Challenges

1. **Diverse Landscape, Diverse Challenges:** Bangladesh faces the challenge of crafting a protection model for Traditional Knowledge (TK) within a diverse legal and infrastructural landscape. The absence of a one-size-fits-all solution adds complexity. The amalgamation of customary laws, intellectual property regulations, and international agreements creates a legal mosaic. While this diversity reflects the pluralistic nature of the nation, it also poses the challenge of harmonizing these frameworks into a cohesive strategy for TK protection. The quest for a unified approach becomes an essential aspect of Bangladesh's journey. Besides from urban centers to remote rural areas, the accessibility to resources and technology diverges. Crafting a TK protection model that accommodates this infrastructural diversity necessitates an adaptive strategy. The challenge lies not only in formulating protective measures but in ensuring their effective implementation across this spectrum of infrastructural capacities. Building capacity and awareness regarding TK protection at both governmental and community levels become integral challenges. Ensuring that all stakeholders, from policymakers to indigenous custodians of knowledge, are well-informed and equipped for effective participation requires comprehensive strategies.
2. **Mitigating Misuse:** New issues arise from the rapidly developing disciplines of genetic engineering and biotechnology, which are governed by intellectual property (IP) laws. Avoiding TK abuse necessitates a flexible and subtle strategy. As Bangladesh embraces advancements in biotechnology and genetic engineering, the protection of TK encounters uncharted territories. The convergence of traditional wisdom and cutting-edge biotechnological practices unveils both opportunities and risks. The challenge lies in mitigating the risks associated with the unintended appropriation and exploitation of TK in the dynamic landscape of biotechnological innovation. The risk of bio piracy, where traditional knowledge is wrongfully claimed as a novel invention, calls for vigilant safeguards. Bangladesh has the opportunity to tailor its approach, recognizing the dynamic nature of both TK and biotechnological innovation. An adaptive strategy ensures that protective measures evolve in tandem with the rapid pace of technological advancements.
3. **Balancing Act:** Striking a delicate balance between robust protection and the promotion of TK usage is a constant challenge. Maintaining equilibrium within the existing IP rights protection mechanism requires finesse. The cornerstone of Bangladesh's strategy lies in the astute recognition of the dynamic nature inherent in both TK and biotechnological innovation. Traditional Knowledge, deeply rooted in centuries-old practices, continuously interacts with the emerging frontiers of biotechnology. This recognition forms the bedrock upon which an adaptive strategy can be meticulously built. Bangladesh has the opportunity to instill flexibility into its policies, allowing them to pivot in response to emerging trends, scientific breakthroughs, and the ever-changing landscape of biotechnological practices.
4. **Categorization Complexity:** The categorization of diverse TK within Bangladesh's geographical boundaries is a daunting task. Determining specific and identifiable knowledge in need of protection, along with defining the custodians of such rights, presents inherent challenges. The categorization process, envisioned as a means to identify, delineate, and protect diverse forms of TK, unfolds as a task

laden with challenges. This intricate dance of recognition demands a nuanced understanding of the multifaceted layers embedded in the cultural heritage of Bangladesh.

5. **Sui Generis Development:** The prospect of developing a sui generis law for TK protection represents a long-term goal. Crafting legislation that responds effectively to the unique needs of indigenous communities is a formidable task. The language and provisions must resonate with the diverse cultural and linguistic landscape of Bangladesh. Precision in defining the scope of protection, outlining permissible uses, and delineating the role of indigenous communities within the legal framework demands a meticulous and culturally informed approach. A key challenge lies in striking the right balance between preservation and innovation. The sui generis law should not only safeguard TK from unauthorized use and misappropriation but also foster a conducive environment for innovation within indigenous communities. This delicate equilibrium ensures that the law becomes a catalyst for both cultural preservation and community development.

PROSPECTS:

1. **Holistic Protection Model:** Bangladesh envisions a comprehensive protection model that transcends conventional boundaries. By existing IP frameworks as a starting point, Bangladesh aims to build a legal infrastructure that not only protects TK from exploitation but also nurtures its sustainable use. This legal framework navigates the intricate intersection of cultural heritage, community rights, and technological advancements. Collaboration between governmental bodies, indigenous communities, and other stakeholders fosters a collective commitment to TK protection. Seeking global alignment without compromising local autonomy, Bangladesh endeavors to position its protection model on the international stage. Strategic engagement with international bodies, sharing best practices, and advocating for a nuanced understanding of TK contribute to the country's aspirations for global recognition.
2. **Adaptive Strategies:** The country's legal and infrastructural capacities become a canvas for adaptive strategies. Bangladesh's commitment to recognizing diverse modalities ensures a responsive and effective protection model. In the adaptive canvas, technology emerges as an enabler rather than a disruptor. Harnessing digital tools, blockchain, and artificial intelligence, Bangladesh integrates technology into the protection model. Bangladesh promotes cross-sectoral partnerships involving government bodies, academia, industry, and civil society. This collaborative approach fosters a holistic understanding of TK, ensuring that protection efforts align with the broader developmental goals of the country.
3. **Community Recognition:** Emphasizing the role and efforts of indigenous communities in TK derivation is a key prospect. This recognition fosters a sense of ownership and ensures the preservation of cultural heritage. At the heart of Bangladesh's vision is the acknowledgment of indigenous communities as the custodians of TK. The prospect of community recognition is not merely symbolic; it's a commitment to empowering these communities. By emphasizing and celebrating their role in TK derivation, Bangladesh aims to foster a profound sense of ownership. This recognition becomes a cornerstone for the preservation of cultural heritage, ensuring that the living repositories of TK are active participants in its protection.
4. **Efficient IP Mechanism Utilization:** Efficiently utilizing the existing IP rights protection mechanism signifies a proactive approach. Bangladesh aims to leverage this mechanism to safeguard TK while encouraging its continued use. Bangladesh aims not only to shield TK from misuse but also to encourage its continued use in a manner that respects cultural contexts and community values. Bangladesh envisions a balanced approach where legal frameworks and community-led initiatives complement each other. The legal safeguards act as formal shields, while community involvement ensures that TK protection is not a distant, abstract concept but a lived reality for those who hold and nurture this knowledge.
5. **Emulating Best Practices:** Drawing inspiration from global exemplars, particularly India, positions Bangladesh to emulate best practices. The prospect of formulating an internationally acceptable regime underscores a commitment to aligning with global standards. Bangladesh envisions partnerships with countries, organizations, and international bodies engaged in similar pursuits. Through shared

experiences and collaborative initiatives, the nation seeks to enrich its own strategies and contribute meaningfully to the global dialogue on TK protection. Bangladesh perceives this challenge not as a barrier but as an opportunity for meticulous categorization. Strategic insights involve deploying robust frameworks for identification and classification, ensuring a comprehensive understanding of the myriad forms of TK.

6. **Proactive National Policy:** A proactive stance in adopting a clear national policy demonstrates Bangladesh's commitment to TK protection. Learning from successful models, especially India's, guides the formulation of a robust and effective policy. . Drawing inspiration from successful models, particularly India's well-established framework, Bangladesh envisions a robust and effective policy. This strategic approach signifies a deliberate effort to create a cohesive and forward-looking roadmap for TK protection within the country. A proactive national policy serves as a foundational pillar in Bangladesh's journey to preserve and promote its rich tapestry of indigenous knowledge. This strategic initiative involves a meticulous study of existing policies, incorporating best practices, and tailoring the framework to suit the unique cultural and socio-economic context of Bangladesh. The proactive stance indicates a readiness to anticipate challenges, respond dynamically, and continually refine the policy landscape in alignment with emerging needs.

CONCLUSION

As Bangladesh navigates the intricate terrain of TK protection, recognizing challenges as opportunities for innovative solutions and fostering a collaborative, adaptive approach are pivotal for ensuring a sustainable and culturally sensitive future. Bangladesh has the chance to craft a model that not only protects its unique cultural heritage but sets a global standard for TK preservation.

FINDINGS AND RECOMMENDATION

Introduction

The Findings in this chapter provide insight into the complex issues related to Bangladesh's indigenous traditional knowledge protection. Indigenous communities have risks as a result of loopholes in current intellectual property rules and the lack of a complete legal framework. Conventional intellectual property laws do not provide adequate protection for traditional knowledge, which is ingrained in cultural traditions and frequently transmitted orally. The issue is made worse by the sluggish progress made in passing and implementing sui generis legislation. Furthermore, there might be disputes due to the intricate interactions between national laws and sui generis systems, which calls for a coordinated response- for which proper recommendations have been discussed in this chapter.

Findings

1. There is an absence of a codified legal framework for the protection of traditional knowledge of indigenous community along with the modifications to already-existing Intellectual Property laws' and a range of voluntary, non-voluntary, and legal measures.
2. Indigenous traditional knowledge and traditional intellectual property are frequently very different. It might be passed down orally, centered on the community, and firmly entrenched in cultural customs. The tools for acknowledging and defending the collective ownership of traditional knowledge are not available under these traditional intellectual property rules. This is important since traditional knowledge is frequently not an individual's property but rather the common history of indigenous groups. Furthermore, unlike the sui generis system, these rules do not guarantee that communities participate in decision-making processes and profit from the commercial use of their knowledge by taking the cultural and social context into account.
3. Under the Convention on Biological Diversity (CBD), the Bangladeshi government started drafting regulations pertaining to novel plant varieties, biodiversity, and community knowledge. Still, sixteen years have passed since the 1998 drafting of the Plant Varieties Act and the Biodiversity and Community

- Knowledge Protection Act. Furthermore, there's no formalized framework in place to handle genetic materials derived from animals.
4. In 2017, Bangladesh fulfilled its international obligations by enacting the Biological Diversity Act, after 25 years of the Convention on Biological Diversity's adoption. This legislation, however, does not recognize the rights of indigenous or local communities to determine who has access to their biological resources and traditional knowledge (TK), not even as individual or collective rights. Rather, total authority over these resources and TK is granted to the bureaucrat-run National Biodiversity Committee (NCB), which is not a legal entity. Prior Informed Consent (PIC) and Mutually Agreed Terms (MAT) processes pertaining to indigenous or local groups are not covered by the legislation. Remarkably, the Act refers to "local community or people" rather than "indigenous" people.
 5. Farmers are excluded from patenting their varieties under the Patents and Designs Act of 1911 because their varieties are already in the public domain and do not meet the requirements for patentability. In this case due to the lack of method awareness among the indigenous community's farmers, bio-pirates may take native varieties, utilize them for bio-prospecting, and generate new variations. Large seed firms run the danger of misusing the nation's indigenous germplasm since the government lacks regulations pertaining to access rights, benefit sharing, and disclosure requirements for patenting these discoveries.
 6. Without regulations to prevent internet piracy or prevent the illicit use of indigenous knowledge, the Copyright Act of 2000 is out of date. Important aspects such as preventing circumvention of digital safeguards and utilizing Digital Rights Management (DRM) are also not adhered to. Copyright protection in databases is unaffected by legislation, and it does not forbid sharing copyrighted content online, deep-linking, or meta-tagging. These holes put indigenous societies' cultural legacy at danger by making it simpler for anyone to exploit and distribute traditional knowledge without repercussions.
 7. Since the goal of a trade secret is to legally prevent the knowledge and information under indigenous community's control -from being disclosed to, acquired by, or used by others without their consent, in a manner contrary to honest commercial practices, trade secrets have been isolated to provide a profound protection for Indigenous knowledge given the avalanche of protective avenues possible under them.
 8. A potential conflict between national legislation and sui generis law arises from differences in approaches to intellectual property and genetic resources protection in case of protection of indigenous traditional knowledge. National laws may not be well-aligned with sui generis systems specifically designed for safeguarding traditional knowledge. For example, national laws might prioritize broader intellectual property rights that may not adequately address the unique characteristics and communal nature of traditional knowledge.

Recommendation

1. Bangladesh need to create a comprehensive legal framework for the preservation of traditional knowledge. Together with modifications to already-existing IPRs, the specific protection system should include a range of voluntary, non-voluntary, and legal measures- which model shall not only safeguards cultural heritage but also will contribute to sustainable development, community empowerment, and global recognition.
2. A sui generis system is needed to be introduced to offer a more culturally sensitive and community-driven approach to protecting Indigenous traditional knowledge compared to the often standardized and individual-focused mechanisms of conventional intellectual property rights. The government should take the initiative to establish a clear national strategy to guarantee the preservation of TK, particularly by looking to India as a model. The ultimate goal must be to creating a policy that is acceptable on a global scale and provides TK holders with appropriate protection.
3. The draft Biodiversity and Community Knowledge Protection Act, 1998 should be put into effect by the Bangladeshi government. The Act has the potential to safeguard communities' rights when it comes to managing, conserving, and improving genetic resources, biodiversity, and traditional knowledge if it is put into practice. In the absence of a written record, communities may face difficulties opposing patents filed by others claiming their traditional methods. This act underscores the importance of recognizing and safeguarding traditional knowledge to ensure that communities retain control over their cultural heritage and practices, preventing unauthorized claims and potential exploitation.

4. The Biological Diversity Act of 2017 needs to be amended or enacted in order to protect indigenous traditional knowledge. These indigenous communities, who frequently live in forests, do not have their rights to ancestral lands and to access forest resources recognized. Rather, by denying people ownership rights over their biological resources and traditional knowledge, the law perpetuates a historical wrong. The legislation overlooks that indigenous peoples need to be in charge of their resources and instead places an excessive amount of emphasis on the state's power. Besides it is submitted to amend the law to make sure our domestic system follows the CBD and the Nagoya Protocol. We need clearer rules, especially about PIC and MAT, and how much benefit should go to indigenous and local communities.
5. In order to prevent the misuse of indigenous traditional knowledge due to the inability of Indigenous farmers, under the Patents and Designs Act of 1911- suggested solutions include amending the law to explicitly exclude traditional knowledge from patentability, introducing benefit-sharing mechanisms, creating an Access and Benefit-Sharing (ABS) framework, recognizing farmers' rights, implementing utility models for small inventions, enhancing enforcement against bio-piracy, and conducting public awareness campaigns.
6. The current copyright law fails to protect indigenous traditional knowledge (ITK) due to outdated regulations and loopholes. This leaves ITK vulnerable to internet piracy and unauthorized exploitations. Updating copyright laws, employing digital rights management (DRM), and implementing sui generis systems are key legal measures for safeguarding intellectual property in the modern era. Besides the Technological solutions like-Blockchain-based databases provide a secure and transparent way to register and track ownership of digital assets, reinforcing copyright claims. Geoblocking which is another technological measure which restricts access to digital content based on the user's geographical location by adding an extra layer of control can be adopted in this case.
7. TK may be effectively protected with trademarks and trade secrets since they offer perpetual protection. With regard to the regional indicators, it offers everlasting protection so long as the customary quality remains preserved- this mechanism should be enhanced for the protection of indigenous traditional knowledge in Bangladesh from piracy and unauthorized exploitation.
8. A conflict between the national legislation and the sui generis law should be avoided by amending the national laws pertaining to intellectual property and genetic resources. In this manner. The new sui generis legislation in addition to the current national laws can offer a workable and suitable dual framework for safeguarding traditional knowledge in and of itself.

Conclusion

The results highlight the serious weaknesses in Bangladesh's system for safeguarding indigenous traditional knowledge. Significant obstacles include the lack of a customized legal framework and the sluggish adoption of sui generis laws. The proposals lay out a planned course of action, stressing the necessity of all-encompassing legal frameworks, community-driven initiatives, and modifications to current legislation. In addition to addressing risks, these actions seek to uphold international norms, empower indigenous people, and protect cultural heritage. To close the current gaps and guarantee a strong system that preserves traditional knowledge for next generations, swift action is required.

CONCLUSION

An in-depth examination of various intellectual property regimes reveals that indigenous knowledge is protected in Bangladesh through copyright law, trade secrets, patents, trademarks, trade secrets, geographical indications, and alternative mechanisms such as Access and Benefit Sharing (ABS), confidentiality agreements, and the Traditional Knowledge Digital Library (TKDL). Given the existing legal framework, a single choice falls short of fully protecting the rights of holders of Traditional Knowledge (TK).

Bangladesh's current intellectual property policy is ineffective in protecting traditional knowledge. As a result, the need for a unique, full-fledged model develops, aligned with international tools to achieve this goal. The study highlights that while proprietors of conventional knowledge can obtain royalties under copyright, patents can serve as a defensive protection mechanism by utilizing the concept of prior art. Nevertheless, the duration of protection offered by these methods is restricted.

Conversely, trade secrets and trademarks become formidable tools that offer unending defense. Geographical indications are particularly attractive as a feasible route since, so long as customary quality is upheld, they offer permanent protection. However, the article acknowledges the drawbacks of conventional IP tools and suggests alternatives such confidentiality agreements, ABS procedures, and the TKDL paradigm.

Besides, a critical drawback surfaces—the CBD and Nagoya Protocol lack provisions for protecting TK at the community level. This void increases the risk of inter-community conflicts and tensions between governments and communities. Contrary to conferring sole ownership of TK to communities, international environmental law aims to benefit both TK holders and external entities deploying TK for commercial purposes. While the agreements intend to grant third parties access to TK contingent on benefit sharing and prior consent, not all states can robustly implement these elements.

As evidenced by Bangladesh's efforts, exemplified through the enactment of the Biodiversity Act (BBA) and Plant Variety Protection Act (PVPA), gaps persist in safeguarding biodiversity- and plant-variety related TK. Bangladesh's trajectory suggests the need for enhancing existing laws by introducing rules on equitable distribution, extending provisions to trans-boundary local communities, establishing a national biodiversity and plant-variety register, and fortifying monitoring mechanisms.

However, the journey to protect TK is intricate, demanding a reevaluation of international environmental law frameworks. Bangladesh's experience underscores the necessity for comprehensive measures, spanning equitable distribution, cross-border considerations, robust registries, and enhanced monitoring. The implications ripple beyond the specific realms of biodiversity- and plant-variety related TK, emphasizing the overarching importance of TK protection—a cause that warrants continued attention and proactive measures.

A strong suggestion for changes to national laws managing intellectual property and genetic resources emerges. This proactive action strives to balance the cohabitation of sui generis laws and national legislation, creating a dual framework for pragmatic and appropriate traditional knowledge protection. As Bangladesh navigates this complex spectrum, the appeal for a comprehensive and dynamic strategy to conserving indigenous traditional knowledge resounds, establishing a balance between protection and promotion in the expanding intellectual property landscape.

As we reflect on this multifaceted landscape, it is clear that the protection of Indigenous Traditional Knowledge transcends legal frameworks alone. It calls for a holistic approach that incorporates cultural sensitivity, community recognition, and collaborative strategies. The trajectory ahead demands not only legal refinements but a collective commitment to preserving the rich tapestry of Indigenous knowledge—a timeless legacy that deserves our unwavering attention and steadfast protection.

REFERENCES

Statutes, Regulations and Policies

1. The draft of Biodiversity and Community Knowledge Protection Act, 1998, Bangladesh
2. Biodiversity Act 2019
3. Draft Patent Act 2019
4. The Copyright Act 2000
5. Trademarks Act 2009
6. The Geographical Indications (Registration and Protection) Act, 2013.
7. TRIPS Agreement
8. Nagoya Protocol
9. Biodiversity Law 1998 (Costa Rica)
10. Books
11. Gphillips, 'Issues and Options for Traditional Knowledge Holders in Protecting Their Intellectual Property' (IP Handbook of Best Practices - IP Handbook Chapter 16, 11 June 2016)
<https://ipmall.law.unh.edu/content/ip-handbook-best-practices-ip-handbook-chapter-16> accessed 22 November 2023

12. Hansen SA (Traditional Knowledge and Intellectual Property: A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting Their Intellectual Property and Maintaining Biological Diversity) <<https://dl.icdst.org/pdfs/files4/b8ec9786c91ee3361589833721d9abca.pdf>> accessed 9 December 2023
13. Stephen A. Hansen and Justin W. VanFleet, 'Traditional Knowledge and Intellectual Property: A Handbook on Issues and Options for Traditional Knowledge Holders in Protecting their Intellectual Property and Maintaining Biological Diversity', American Association for the Advancement of Science (AAAS), 2003, Washington, DC, pp-3.
14. Stokes S, 'Art and Copyright' (Google Books, 11 March 2021) <https://books.google.com/books/about/Art_and_Copyright.html?id=jN4fEAAAQBAJ>> accessed 6 December 2023
15. Wipo handbook on Intellectual Property, Traditional Knowledge and Traditional Cultural Expression- A guide for countries in transition <<https://www.wipo.int/publications/en/details.jsp?id=4108>>
16. Journal Articles
17. Cullet, P. et al. Intellectual property rights, plant genetic resources, and traditional knowledge.(2006) <<https://www.researchgate.net/publication/353872224>>
18. Chen CW and Gilmore M, 'Biocultural Rights: A New Paradigm for Protecting Natural and Cultural Resources of Indigenous Communities' (The International Indigenous Policy Journal)
19. Correa CM ('Traditional Knowledge and Intellectual Property: Issues and Options Surrounding the Protection of Traditional Knowledge') <https://www.semanticscholar.org/paper/Traditional-knowledge-and-intellectual-property%3A-of-Correa/9cb87789d0d534d03592d7c9d701cb8f23c8b8e> accessed 7 December 2023
20. Dhamai B, 'An Overview of Indigenous Peoples in Bangladesh' (Academia.edu, 11 July 2018) <<https://www.thedailystar.net/law-our-rights/rights-indigenous-peoples-bangladesh-1266478>> accessed 1 September 2023
21. Dagne TW, 'Law and Policy on Intellectual Property, Traditional Knowledge and Development: Legally Protecting Creativity and Collective Rights in Traditional Knowledge-Based Agricultural Products through Geographical Indications' (SSRN, 6 May 2010)
22. Feng S, 'How Are Unregistered Trademarks Protected in China? - IIC - International Review of Intellectual Property and Competition Law' (SpringerLink, 26 September 2013) <<https://link.springer.com/article/10.1007/s40319-013-0106-6>> accessed 7 December 2023
23. Ikechi Mgbefo, (Patents and Traditional Knowledge of the Uses of Plants: Is a Communal Patent Regime Part of the Solution to the Scourge of Bio Piracy) Indian Journal of Global Legal Studies 163, 172.
24. Improving the Jhum System in bangladesh - research gate) <https://www.researchgate.net/publication/40106659_Improving_the_jhum_system_in_Bangladesh> accessed 23 October 2023
25. (Indigenous Knowledge Development in Bangladesh: Present and future ...) <https://www.semanticscholar.org/paper/Indigenous-Knowledge-Development-in-Bangladesh%3A-and-Sillitoe/9229d4dab6bdff01959a2e3572689d61f26bbcc4> accessed 2 December 2023
26. Kamrul Hossain & Rosa Maria Ballardini , 'Protecting Indigenous Traditional Knowledge Through a Holistic Principle-Based Approach'(2021), Nordic Journal of Human Rights, 39:1, 51-72, DOI: 10.1080/18918131.2021.1947449
27. Legal protection of traditional knowledge: comparative study of Bangladesh, Australia and Indonesia https://www.researchgate.net/publication/364654480_Legal_Protection_of_Traditional_Knowledge_Comparative_Study_of_Bangladesh_Australia_and_Indonesia accessed 6 December 2023
28. Md. Razidur Rahman, 'Protection of Traditional Knowledge and Traditional Cultural Expressions in Bangladesh' (2015) 20 Journal of Intellectual Property Rights 164.
29. Michael C. Ogwezzy, 'Protection of Indigenous or Traditional Knowledge Under Intellectual Property Laws: An Examination of the Efficacy of Copyright Law, Trade Secret and SUI Generis Rights (2012) International and Comparative Law Review.'
30. Mohammad Towhidul Islam & Moniruz Zaman, 'Protection of Traditional Knowledge: Finding an Appropriate Legal Framework for Bangladesh' (2020) Dhaka University Law Journal, Vol. 31, pp. 29-48

31. Mohiuddin, M. and Alam, Md.K. (no date) ‘Opportunities of traditional knowledge in natural resource management experiences from in the Chittagong hill tracts, Bangladesh’, Indian journal of traditional knowledge. 10, pp.474480.<https://www.researchgate.net/publication/290790389_Opportunities_of_traditional_knowledge_in_natural_resource_management_experiences_from_in_the_Chittagong_hill_tracts_Bangladesh/citation/download>
32. Ogwezy MC ((PDF) protection of indigenous or traditional knowledge under ...) <https://www.researchgate.net/publication/322707428_Protection_of_Indigenous_or_Traditional_Knowledge_Under_Intellectual_Property_Laws_An_Examination_of_the_Efficacy_of_Copyright_Law_Trade_Secret_and_SUI_Generis_Rights> accessed 9 September 2023
33. Opportunities of traditional knowledge in natural resource management https://www.researchgate.net/profile/Md-Alam-436/publication/290790389_Opportunities_of_traditional_knowledge_in_natural_resource_management_experiences_from_in_the_Chittagong_hill_tracts_Bangladesh/links/60d800f0458515d6fbe02181/Oportunities-of-traditional-knowledge-in-natural-resource-management-experiences-from-in-the-Chittagong-hill-tracts-Bangladesh. Accessed 6 December 2023
34. Protection of traditional names and designations <https://www.semanticscholar.org/paper/Protection-of-Traditional-Names-and-Designations-Knaak-Kur/fb20732901f0858128f7503e8a9000890276ec12> accessed 7 December 2023
35. Protection of Indigenous or Traditional Knowledge under Intellectual Property Laws: An Examination of the Efficacy of Copyright Law, Trade Secret and SUI Generis Rights. (2012) International and Comparative Law Review
36. Preservation and Protection of Traditional Knowledge – Diverse Documentation Initiatives across the Globe)<https://www.researchgate.net/publication/280564503_Preservation_and_Protection_of_Traditional_Knowledge_-_Diverse_Documentation_Initiatives_across_the_Globe> accessed 7 December 2023
37. Oguamanam C, ‘Documentation and Digitization of Traditional Knowledge and Intangible Cultural Knowledge: Challenges and Prospects’ (SSRN, 20 July 2013) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2296199> accessed 8 December 2023
38. Razidur Rahman, Protection of Traditional Knowledge and Traditional Cultural Expressions in Bangladesh (2015). Journal of Intellectual Property Rights, Vol. 20, pp. 164-171, May 2015, Available at SSRN: <https://ssrn.com/abstract=2827043>
39. Rashid, Saifur. (2010). ‘Indigenous fishing knowledge: the changing fishing technology and techniques among the Koibortta flood-plain fishers of northeast Bangladesh.’ 58-68.
40. Raustiala K and Munzer SR, ‘The Global Struggle over Geographic Indications’ (SSRN, 23 August 2006) <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=925751> accessed 2 December 2023
41. Redvers N and others, ‘Indigenous Peoples: Traditional Knowledges, Climate Change, and Health’ (PLOS Global Public Health)<<https://journals.plos.org/globalpublichealth/article?id=10.1371%2Fjournal.pgph.0002474>> accessed 7 December 2023
42. Tri AT and Joko Setiyono (Legal protection of traditional knowledge <https://www.researchgate.net/publication/364654480_Legal_Protection_of_Traditional_Knowledge_Comparative_Study_of_Bangladesh_Australia_and_Indonesia> accessed 7 September 2023
43. Online Reports
44. ‘Bangladesh - National Environment Management Action Plan (NEMAP) (Vol. 2)’ (World Bank) <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/329001468741610744/bangladesh-national-environment-management-action-plan-nemap> accessed 6 December 2023
45. Macbeth S, ‘Recording and Using Indigenous Knowledge: A Manual’ (Recording and using indigenous knowledge: a manual | Participatory Methods) <<https://www.participatorymethods.org/resource/recording-and-using-indigenous-knowledge-manual>> accessed 6 December 2023
46. Girsberger MA (Legal protection of traditional cultural expressions: A policy Perspective September 2008)

47. UNPFII sixth session for Indigenous Peoples (no date) United Nations. Available at: <<https://www.un.org/development/desa/indigenouspeoples/unpfii-sessions-2/sixth.html>> (Accessed: 21 September 2023).
48. Websites
49. Antony Seeger (Intellectual property and cultural rights: A conversation with Anthony Seegar) <<https://www.tandfonline.com/doi/full/10.1080/10588167.2020.1710380>> accessed 9 October 2023
50. (African model legislation for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources)l< <https://wipolex-res.wipo.int/edocs/lexdocs/laws/en/oau/oau001en.html>> accessed 8 December 2023
51. 'Biopiracy (Article) | Ethical Concerns' (Khan Academy) << <https://www.khanacademy.org/science/learn-to-clone-a-sheep-and-more/xb1ef3389afa1715a:biotechnology-and-its-applications/xb1ef3389afa1715a:ethical-concerns/a/biopiracy>> accessed 24 October 2023
52. Bio piracy (Wikipedia, 28 October 2023) <<https://en.wikipedia.org/wiki/Biopiracy>> accessed > 1 September 2023
53. Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the
54. Benefits Arising out of their Utilization <https://www.cbd.int/doc/publications/cbd-bonn-gdls-en.pdf>
55. CBD guidelines Akwé: KON Guidelines - Convention on Biological Diversity) < <https://www.cbd.int/doc/publications/akwe-brochure-en.pdf>>
56. Downis DR, 'How Intellectual Property Could Be a Tool to Protect Traditional Knowledge' (HeinOnline, 8 March 2021) <https://heinonline.org/HOL/LandingPage?handle=hein.journals%2Fcjel25> accessed 7 December 2023
57. Fao.Org' (Free, Prior and Informed Consent) < <https://www.fao.org/indigenous-peoples/our-pillars/fpic/en/>> accessed 1 December 2023
58. Imtiaz Ahmed Sajal and others, 'International Law on Access and Benefit-Sharing: Bangladesh' (Bangladesh Law Digest (BDLD), 13 November 2020) < <https://bdlawdigest.org/access-and-benefit-sharing-bangladesh.html>> accessed 4 December 2023
59. 'Indigenous Peoples Rights Are Human Rights.' (Amnesty International, 18 September 2023) <<https://www.amnesty.org/en/what-we-do/indigenous-peoples/>> accessed 23 October 2023
60. Indigenous Peoples' (Wikipedia, 18 September 2023) <https://en.wikipedia.org/wiki/Indigenous_peoples> accessed 23 October 2023
61. Indigenous Knowledge Theories' (sitwe, 1 January 2020) < <https://sitwe.wordpress.com/2019/12/28/indigenous-knowledge-theories>> accessed 1 December 2023
62. 'Jhum' (Wikipedia, 27 November 2023) <https://en.wikipedia.org/wiki/Jhum> accessed 5 December 2023
63. Masenya TM, 'Decolonization of Indigenous Knowledge Systems in South Africa: Impact of Policy and Protocols' (International Journal of Knowledge Management (IJKM), 1 January 2022) <https://www.igi-global.com/article/decolonization-of-indigenous-knowledge-systems-in-south-africa/310005> accessed 4 December 2023
64. Model Provisions for National Laws on the Protection of Expressions of Folklore Against Illicit Exploitation and Other Forms of Prejudicial Action, 1982' (WIPO Lex) <<https://www.wipo.int/wipolex/en/text/186459>> accessed 8 December 2023
65. Nason JD, 'Traditional Property and Modern Laws: The Need for Native American Community Intellectual Property Rights Legislation' (HeinOnline, 8 March 2021) <https://heinonline.org/HOL/LandingPage?handle=hein.journals%2Fstanlp12&div=25&id=&page=&> accessed 7 December 2023
66. Overview: The TRIPS Agreement' (WTO) <https://www.wto.org/english/tratop_e/trips_e/intel2_e.htm#:~:text=The%20TRIPS%20Agreement%20requires%20Member,novelty%2C%20inventiveness%20and%20industrial%20applicability.> accessed 5 September 2023.
67. Principles & Guidelines for the Protection of the Heritage of Indigenous People' (Principles & Guidelines for the Protection of the Heritage of Indigenous People | Alaska Native Knowledge Network)< <https://www.uaf.edu/ankn/indigenous-knowledge-syst/principles-guidelines-for>> accessed 8 December 2023

68. Ruiz MM, 'The Legal Protection of Widely Shared and Dispersed Traditional Knowledge' (Taylor & Francis, 14 July 2017) <<https://www.taylorfrancis.com/chapters/edit/10.4324/9781315666358-7/legal-protection-widely-shared-dispersed-traditional-knowledge-muller-manuel-ruiz>> accessed 7 December 2023
69. 'Sui Generis' (Wikipedia, 29 November 2023) <https://en.wikipedia.org/wiki/Sui_generis> ; accessed 24 November 2023
70. 'Traditional Cultural Expressions' (WIPO) <<https://www.wipo.int/tk/en/folklore/>> accessed 23 October 2023
71. Trips agreement of the WTO - Cambridge scholars publishing) <https://www.cambridgescholars.com/resources/pdfs/978-1-4438-4834-3-sample.pdf> accessed 7 December 2023
72. 'Teak' (Wikipedia, 24 November 2023) <https://en.wikipedia.org/wiki/Teak> accessed 5 December 2023
73. The Commercial Use of Biodiversity: Access to Genetic Resources and Benefit-Sharing' (The commercial use of biodiversity: access to genetic resources and benefit-sharing | IUCN Library System, 1 January 1999) <<https://portals.iucn.org/library/node/24382>> accessed 8 December 2023
74. The Nagoya Protocol - Convention on Biological Diversity' (DCCEEW) <<https://www.dcceew.gov.au/science-research/australias-biological-resources/nagoya-protocol-convention> biological#:~:text=The%20Nagoya%20Protocol%20establishes%20a,any%20benefits%20from%20the%20use> accessed 24 November 2023
75. World Trade Organization' (WTO) <https://www.wto.org/english/tratop_e/trips_e/art27_3b_background_e.html> accessed 24 November 2023
76. Warner-Lambert Pharm. Co. v. John J. Reynolds, Inc., 178 F. Supp. 655 (S.D.N.Y. 1959)' (Justia Law) <https://law.justia.com/cases/federal/district-courts/FSupp/178/655/1642490> accessed 7 December 2023
77. Newspapers
78. Arif Ahmed, 'Rights of Indigenous Peoples in Bangladesh' (The Daily Star, 8 August 2016) <<https://www.thedailystar.net/law-our-rights/rights-indigenous-peoples-bangladesh-1266478>> accessed 1 September 2023
79. Farina I, 'The Soul Sings Folk' (The Daily Star, 24 February 2018) <https://www.thedailystar.net/supplements/now-lifestyle/the-soul-sings-bangla-and-bangladesh-folk-songs-1539010> accessed 5 December 2023
80. Kabita Chakma , ' Misappropriation of Ben products and protection of 'Traditional Cultural Expressions' (Dhaka,26 October 2020) < <https://www.newagebd.net/article/120039/misappropriation-of-ben-products-and-protection-of-traditional-cultural-expressions>> 1 September 2023
81. Lubaba T, 'An Overview of Environmental Laws of Bangladesh' (The Daily Star, 3 June 2019) <https://www.thedailystar.net/law-our-rights/news/overview-environmental-laws-bangladesh-1753360> accessed 9 December 2023
82. Mohammad Monirul Azam,' Legal protection of Indigenous Intellectual Property Rights' < <https://archive.thedailystar.net/law/2009/08/03/index.htm>> 1 September 2023
83. 'New Patent Law Passed in the Parliament' (The Daily Star, 15 April 2022) <https://www.thedailystar.net/law-our-rights/news/new-patent-law-passed-the-parliament-3005521> accessed 6 December 2023
84. Sajal IA, 'How Far the Biological Diversity Act 2017 Complies with International Obligations?' (The Daily Star, 18 November 2019) < <https://www.thedailystar.net/law-our-rights/news/how-far-the-biological-diversity-act-2017-complies-international-obligations-1829140>> accessed 9 December 2023
85. The Chittagong Hill Tracts Regulation and Its Constitutional Status (The Daily Star, 30 November 2020) <https://www.thedailystar.net/law-our-rights/news/the-chittagong-hill-tracts-regulation-and-its-constitutional-status-2003809> accessed 6 December 2023