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THE ROLE OF INTELLECTUAL PROPERTY RIGHTS IN TRADITIONAL KNOWLEDGE PROTECTION FOR FURTHERING SUSTAINABILITY AND BIODIVERSITY CONSERVATION

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ABSTRACT

India is a country blessed with a rich cultural heritage passed down from generation to generation as a matter of right and duty. As a part of a privileged community, we inherit the right to use the legacy left behind by our ancestors for further growth and development of mankind. Conversely, we also owe an obligation to preserve these endowments we received from our forefathers as traditional knowledge for posterity. Using the resources bestowed upon us in an eco-friendly and participative demeanor is the cornerstone of modern-day parlance on sustainability. The present research paper addresses the exigency of traditional knowledge management through

IPR for protection against misappropriation and undue exploitation for commercial gains. It also aims at drawing a confluence between traditional knowledge protection and environmental conservation through robust IPR strategies.

2. INTRODUCTION

Traditional Knowledge (TK) refers to ideas, knowledge, traditions, perceptions, practices, skills and innovations we inherit from our forefathers that pass smoothly from generation to generation. Traditional knowledge can be found in every aspect of human life, ranging from agriculture, forestry, art, architecture, medicine, and literature to science, technology and biodiversity. These

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traditional systems of knowledge and innovation are often not protected under the pre-existing intellectual property law regime, which includes patents, trademarks, copyrights, industrial designs and geographical indications. Hence, they are often misappropriated for corporate gains without a fair and equitable benefit-sharing mechanism.[2]

There have been many cases of biopiracy worldwide. Traditional knowledge of biodiversity was used without fair recognition of the inputs of indigenous communities in its materialization. Their consent was not taken, nor were the profits made out of their cultural knowledge and practices used for their development. It signifies a lack of prior informed consent and benefit-sharing arrangements, which are the most significant aspects of the Nagoya Protocol that form part and parcel of the Convention on Biological Diversity (CBD).[3]

In the 1990s, a patent was granted to US corporate W.R. Grace for a method of extracting a substance having anti-fungicidal properties from Neem oil. Neem has been used traditionally as a medicine in India, and its fungicidal properties were well-known. The Indian government challenged the patent granted to the US corporation by the European Patent Office. This led to a long, protracted legal battle that eventually culminated in EPO revoking the patent and recognizing that Neem's fungicidal properties are Indian traditional knowledge over which W.R. Grace blatantly tried to obtain a monopoly.[4]

Inclusivity is the mainspring of sustainable development. SDGs 16 and 17 envisage a society wherein social justice and equality prevail and the rights of the indigenous communities and tribal people are recognized and respected. Indigenous communities and forest dwellers have a right to access their land and property annexed to it for sustenance. The disruption of their customary

2 International Traditional Knowledge Institute, *what is traditional Knowledge* (2019).

3 Riya, "Protection of Traditional Knowledge Under Intellectual Property Regime" 1 *E-Journal of Academic Innovation and Research in Intellectual Property Assets (E-Jairipa)* 151-159 (Dec 2020).

4 Hutton, I., *Patenting life, biopiracy and the case of the Indian neem tree*. 53-56 (2003).

practices breeds conflict and violence that needs to be curbed according to SDG 16. The next goal aims at revitalizing global partnerships for the promotion of sustainability. SDG 17 calls for cross-country collaborations for technology transfer and capacity building in developing countries. All this requires strengthening the intercontinental IPR ecosystem.[5]

In the upcoming sections, we will discuss the complicated mesh encompassing intellectual property, traditional knowledge and sustainable development goals. The controversies surrounding this reticulation will be demystified to develop strategies and plans for the preservation and promotion of Traditional Knowledge through IPR for sustainable development. This parlance signifies a newfound understanding that traditional knowledge and practices have a lot more to offer in the direction of sustainable development than we had earlier discerned.

3. INTERLINKAGES BETWEEN SUSTAINABLE DEVELOPMENT GOALS AND INTELLECTUAL PROPERTY RIGHTS

Intellectual Property protects the creations of human minds and grants exclusive rights of access, use and distribution through assignment and licensing to the creators. It provides the proprietors of the creative works the necessary impetus to continue investing their time, money and efforts in the creative and innovative processes. It is an efficient mechanism that allows them to bear the fruits of the meticulousness and determination to create new products and processes that provide economic benefit and signify a major technical advance to the existing state of affairs.[6]

Sustainable development is the resolution of the international community to meet the needs of present generations without compromising the ability of future generations to meet their needs. It is a vision that integrates colossal concerns of inequality, hunger, poor health, poverty,

5 United Nations, Sustainable Development Goals, *Take Action for Sustainable Development Goals.*

6 WIPO, *what is Intellectual Property* (2020).

environmental degradation, social conflicts and violence and aims at building a socio-economic, legal, administrative and political framework to address conundrums that lie in the path of our common future.[7] The 2023 Global Sustainable Development Report highlights the importance of science in the transformation processes for a better present and future. The knowledge and innovation developed through research and development activities need to be used efficiently, along with the appreciation of traditional knowledge used for creating industrial applications for building our common future.[8]

World Intellectual Property Day is celebrated every year on 26 April 2024, and this year the theme of the day, as announced by WIPO, is "IP and the SDGS: Building our common future with innovation and creativity". Ingenuity and IP lay at the threshold of a society that values science, technology and innovation as a means to achieve human growth and sustainable development. IP incentivizes scientists, engineers and business enterprises to put in money and labor for developing solutions to present-day social, economic, cultural and ecological problems. Associating IP with sustainable development is a pivotal step that propels us towards a prosperous and peaceful planet.[9]

4. PROMOTION AND PRESERVATION OF TRADITIONAL KNOWLEDGE THROUGH IP MANAGEMENT

Traditional knowledge is the valuable know-how, skills, products, processes and innovations developed by indigenous and tribal communities that are passed down from generation to generation. Traditional cultural expressions, on the other hand, refer to various tangible and

7 United Nations, Sustainable Development Goals, *What is Sustainable Development* (2023).

8 United Nations, Global Sustainable Development Report, *Times of Crisis, Times of Change: Science for Accelerating Transformations to Sustainable Development* (2023).

9 WIPO, *World Intellectual Property Day 2024: Intellectual Property and the UN Sustainable Development Goals* (2024).

intangible forms through which culture is expressed. It includes paintings, sculptures, folk songs, dances, dramas, and various other forms of art.[10]

Sometimes, there is an intermixing of traditional knowledge and traditional cultural expressions. For example, India's mural traditions date back to the 8th century AD, especially in Kerala temples, wherein mythology is represented in a graphical form. The method of making these murals is covered under traditional knowledge, whereas the unique aesthetic features of this art form encompass the domain of traditional cultural expressions.

There is a certain degree of disjunction between traditional knowledge and intellectual property rights. The conventional IP system failed to recognize the importance of traditional knowledge and traditional cultural expressions. There was a controversy on whether traditional knowledge and traditional cultural expressions qualify for protection under the IP system. Many IP specialists and researchers argued that the key ingredients of novelty, inventive step and industrial application, as given under Article 27.1 were missing for patent protection of traditional knowledge. Moreover, for copyright protection, certain conditions like fixation, originality and a minimal level of creativity must be fulfilled. Most often, the traditional cultural expressions don't meet the criteria for copyright protection.[11]

The lack of safeguard mechanisms for traditional knowledge and traditional cultural expressions soon became the elephant in the room. The cases of misappropriation of traditional knowledge grew, which was viewed by local people as a theft of their cultural identity and heritage and a denial of their collective human rights. All this renewed the public discourse on the need to protect and preserve traditional knowledge under the diverse spectrum of intellectual property rights.

Today, WIPO administers an international legal framework for the protection of traditional knowledge, traditional cultural expressions and biological resources. Various rounds of

10 WIPO, *Traditional Knowledge and Intellectual Property*, Background Brief No. 1. (2023).

11 WIPO, *Intellectual Property and Traditional Knowledge* (2022).

discussions are conducted in the WIPO Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore for the formulation of global plans and targets for the preservation and protection of the cultural heritage of indigenous and traditional communities through a robust IP management system. Additionally, the Convention on Biological Diversity envisages a proactive system for prior informed consent and mutually agreed terms for the sharing of benefits arising from the utilization of genetic resources.[12]

Intellectual Property, if used correctly, can help in protecting and promoting traditional knowledge and cultural expressions. Indigenous communities and forest dwellers can use IP to prevent the use of their cultural knowledge, practices and skills without their permission for monetary gains out of commercial exploitation. An appropriate use of IP can help communities enter into partnerships, joint ventures and licensing agreements for the industrial application of their traditional knowledge. An effective strategy for implementation and enforcement of IP rights must be put in place for the protection of traditional knowledge against unauthorized access, use and distribution in the market.[13] IP can also play an instrumental role in protecting small and medium-sized businesses against competition from giant firms and corporations.

5. FOSTERING SUSTAINABLE DEVELOPMENT THROUGH THE PROTECTION OF TRADITIONAL KNOWLEDGE

With scientific progress and technological advancement, many would have thought that traditional knowledge, skills and practices must have fallen into redundancy and antiquity, but this is far from the truth. Recent studies show that traditional knowledge is a major driver of human welfare and sustainable development. Many international Organisations, including the World Intellectual Property Rights Organization (WIPO), the World Health Organization (WHO, the Food and

12 Ibid.

13 Evalueserve, *Intellectual Property Management,* Accessed at Intellectual Property Management - Evalueserve.

Agriculture Organization (FAO), the UN Commission on Human Rights and inter alia, acknowledge this fact. The international community has steadily accepted the value and function of indigenous knowledge and practices in various sectors of the economy.[14]

Probably the most fundamental endowment of traditional knowledge is its impact on the primary sector, which includes agriculture, forestry, aquaculture, and products made from natural resources like handicrafts, pottery and architecture. The contribution of traditional knowledge in these sectors of the human economy for the promotion of sustainability is the most inadvertent gospel of the modern day. More recently, the exceptional benefaction of traditional knowledge and practices in secondary and tertiary sectors, especially pharmaceuticals and healthcare, became clearer.[15] Since time immemorial, cultural practices like yoga, ayurveda and naturopathy have been ingrained in Indian society. Our Hon'ble Prime Minister called India a "treasure trove of herbal plants" and called it "green gold". Our future depends on how we use our traditional knowledge and resources to publicize the habits and ways of living of yore to develop a healthier and happier India.[16]

Traditional knowledge is extremely dynamic. Indigenous communities and tribes for centuries have adjusted and adapted to their changing surroundings. Human populations all over the globe have changed their livelihood practices like agriculture, forestry and pastoralism according to the changes in climate and other factors like water availability, natural calamities, outbreaks of diseases, war and invasions. This led to an understanding that traditional knowledge probably has a solution to tackle one of the gravest concerns of the present day, i.e., climate change. Combining

14 Ashish Kothari, "Traditional Knowledge and Sustainable Development" *International Institute of Sustainable Development* 4 - 6 (September 2007).

15 ibid

16 Government of India, "A Decade of Transformative Growth in Ayush: Towards Holistic Health of All", Ministry of AYUSH 1-6 (2024)

traditional knowledge and practices with various sectors of the human economy is an effective step towards global climate action.[17]

Uttarakhand Himalayas are extremely vulnerable to natural hazards like earthquakes, floods and landslides. The local communities used their practical experience and ingenuity to develop effective resource management strategies that would mitigate the risk of various disasters. A myriad of innovative strategies have been developed to reduce losses incurred as a result of natural disasters. Indigenous communities heavily emphasize groundwater exploitation, forest conservation, terrace farming, selection of higher grounds for human habitation and seasonal migration to ensure the survival of succeeding generations in the drudgeries of the mountains.[18]

Traditional knowledge and practices provide a cost-effective and sustainable strategy to combat the wrath of nature. There is a need to document and study them in great detail as they are on the verge of getting lost today with modernization, migration and loosening of community ties. Moreover, indigenous knowledge, skills and practices are often used without their permission. It is misappropriated for commercial gains without any benefits of the industrial application of their knowledge reaching them. All this leads us to the way of promotion of the scientific and technological application of TK through the exclusivity and protection granted through various IP regimes.

6. CASE STUDY: THE MISHING COMMUNITY OF MAJULI ISLAND USES TRADITIONAL KNOWLEDGE TO DEAL WITH ANNUAL FLOODS

17 ibid.

18 Piyush Rautela, "Traditional Practices of the People of Uttarakhand Himalaya in India and Relevance of These in Disaster Risk Reduction in Present Time" 31 *International Journal of Disaster Risk Reduction* 281-290 (2015).

Mishing is an indigenous tribal community living in Majuli, the largest riverine island of the world. Mishing's have a rural economy based on agriculture and allied activities like fishing and animal husbandry. Due to rainfall in their land, they often are sufferers of heavy floods. They have their own traditional knowledge system that provide them early warning systems and aid them to aptly prepare for impending disasters. This traditional knowledge is the outcome of the vast experience that has flown from generation to generation in the tribal community.[19]

Mishing's keep notice of the water levels of the Brahmaputra River close to them. They draw a befitting judgment of a heavy storm and flooding in a year when large amounts of soil silt flows downstream along with the river stream. Another common congruous assumption is that a downpour for a week during the start of the rainy season will probably culminate in heavy floods.[20]

The Mishing community has adapted well to their environment. They build houses on a bamboo platform to prevent themselves from flooding. Natives know swimming and rowing to deal with annual floods. Mishing's have agricultural systems that suit their environs. The Mishing's in Majuli Island grow Saali paddy in high line areas and deep-water rice in low line areas. This is so because they don't waste their agricultural produce because of floods which come every year. The deep-water rice is not affected by flood waters and can be harvested after the floods recede.[21]

The Mishing community has a well-established set of traditional practices and mechanisms to deal with natural calamity that strikes them annually. The local government has efficiently employed indigenous knowledge and experience to deal with the rapid climate change and to mitigate the risks of the disaster. Integrating traditional knowledge with modern scientific technology has led to pleasant results in the arena of disaster management by reducing risks to life and property. It is

19Sunanda Dey, *Indigenous Knowledge in Disaster Risk Reduction and Climate Change Adaptation: Study of Housing pattern and Agricultural practices of Mishing community on Majuli Island, Assam*, Disaster & Development, Vol. 6 No. 1 & 2, December 2012

20 Ibid.

21 Ibid.

a more comprehensive and sustainable strategy that covers community efforts in its ambit. Placing this type of traditional knowledge in the modern IP framework is an arduous task that will propel us towards twin goals of disaster management and development of the community.

7. TRADITIONAL KNOWLEDGE PROTECTION AND BIODIVERSITY CONSERVATION

Biodiversity is essential for the survival of humans on Earth. We rely heavily on it for the air we breathe, the food we eat, the clothes we wear and the houses we build. Life without biodiversity is impossible. Biodiversity conservation is of utmost importance. Focus must be placed on ecosystem restoration and natural habitat protection to combat the rapid decline in flora and fauna. The modern-day parlance on intellectual property rights and traditional knowledge systems includes significant discussions on the role of two international treaties, namely the TRIPS Agreement and the Convention of Biological Diversity (CBD).

The rapid use of biotechnology for crop improvement and gene modification led to many adverse effects and for combating it the above-mentioned international legal systems were born. It contributed affirmatively to IP rights in biotechnology and aimed at building a safer and more secure environment for further scientific progress.

At the outset, the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement by the World Trade Organization lays down minimum standards for protection for IPRs like patents, trademarks, copyrights, GI tags and traditional knowledge. Article 27.3 of the TRIPS Agreement, also known as the biotechnology clause, provides that members may exclude animals and plants from patentability. However, microorganisms and non-biological processes form patentable

subject matter. It stipulates that member states may choose to provide patents to plant varieties or develop a sui generis system. [22]

It is baffling to note that although traditional knowledge finds no place in the TRIPS Agreement, the nature of patent rights conferred by the TRIPS Agreement lays down a significant implication for traditional knowledge systems all over the world. Patent rights are to be granted to all inventions, whether products or processes, that fulfil the basic criteria of novelty, inventive step and industrial application. For a long time, the West developed new technologies and inventions in various fields like agriculture, medicine and the food industry by appropriating traditional knowledge. The indigenous communities and places from where the intellectual capital and biological resources were borrowed did not receive any monetary compensation.

The hue and cry about the impact of the patenting of traditional knowledge led to the development of numerous alternative legal models for the protection of traditional knowledge. In various international meetings and conferences, manifestos have been laid on the table proposing a benefit-sharing mechanism wherein the commercial benefits of traditional knowledge shall be shared with the real owner of traditional knowledge. Another alternate approach is the misappropriation model, which involves a proactive revocation of patents that exploit traditional knowledge without necessary authorizations. [23]

The draft of the Substantive Patent Law Treaty (SPL) which was introduced at the Tenth Session of the Standing Committee on the Law of Patents, WIPO (2004) proposes a multilateral arrangement for the harmonization of patent law for the grant of exclusivity over inventions under the TRIPS Plus regime which is currently under negotiation. It contains specific provisions that allow member states to formulate domestic laws that make it compulsory for patent applicants to

22 C. Niranjan Rao. "Patents for Biotechnology Inventions in TRIPs." *Economic and Political Weekly* 37, no. 22 (2002): 2126–29. http://www.jstor.org/stable/4412187.

23 IISD Trade and Development Brief Traditional Knowledge and Patentability (2003) IISD Trade and Development Brief #7

disclose the biological source of plants or other genetic material used in various biotechnological inventions. Furthermore, if the inventions involve the use of traditional knowledge, the inventors must enter into a benefit-sharing agreement with the owners of the traditional knowledge. In other words, it is necessary to prove prior informed consent for the use and commercialization of traditional knowledge.[24]

Although the TRIPS Agreement did not discuss the implications of IPRs on biodiversity in detail, the Convention on Biological Diversity signed at the United Nations Conference on Environment and Development in Rio de Janeiro, Brazil (1993) laid special emphasis on the conservation and sustainable use of biological resources along with adequate benefit-sharing mechanisms. Article 8(j) of the Convention of Biological Diversity stipulates that the contracting must be obliged to "subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices."[25]

The profound conflict between the provisions of CBD and IPR-related provisions in the TRIPS Agreement has given rise to negotiations on TRIPS Plus standards. While CBD focuses on providing sovereign rights to nations over their biological resources, it also contains essential provisions for the prior informed consent for the use of traditional resources and fair and equitable sharing of benefits arising out of the exploitation of traditional knowledge. These provisions were missing in the TRIPS Agreement, and hence several negotiations revolved around the core of the

24 Dhar, Biswajit & Anuradha, R. (2005). Substantive Patent Law Treaty: What It Means for India. Economic and Political Weekly. 40. 1346-1354. 10.2307/4416400.

25 Convention on Biological Diversity (1993) Article 8(j) - Traditional Knowledge, Innovations and Practices

need to review and update the Agreement's Article 27 in the light of significant progress in biotechnology.

Many research scholars and public-minded citizens all around the globe have advocated an interesting opposing view that traditional knowledge must be excluded from the ambit of the TRIPs Agreement. The exponents of this viewpoint have identified a multitude of impediments in the journey of granting intellectual property protection to traditional knowledge. The foremost concern is identifying the ownership of traditional knowledge. It is imperative to note that traditional knowledge is not held by private individuals; it belongs equally to the whole community residing in a particular area.

Proponents of such an opinion also comment on the dearth of legal requirements, such as novelty and non-obviousness, in the traditional knowledge systems for the grant of patents. The champions of IPR rights in traditional knowledge counter these contentions by proposing that the elements of traditional knowledge can be utilized effectively to develop new technologies for the progress of mankind. TRIPs should not leave behind traditional knowledge as just like any other IPR, it is deemed to be a product of an intellectual mind. It represents innovation and creativity for the betterment of humanity, and hence, it is imperative to classify it as a rudimentary form of R&D. [26]

8. Impact of TRIPS and CBD on IPR Environment in India

As a member state, India refined its IPR laws to align with the TRIPS Agreement. It modernized India's IPR regime and promoted global competitiveness. India amended its Patent Law in 2005. It has a significant interlinkage with biodiversity and traditional knowledge in India. The 2005 Amendment Act specifically puts traditional knowledge in the domain of the non-patentable

26 IISD Trade and Develpment Brief Traditional Knowledge and Patentability (2003) IISD Trade and Development Brief #7

subject matter and provides for the revocation of inventions based on the misappropriation of traditional knowledge.[27]

Based on the mandates of the Budapest Treaty, specific provisions were added for depositing microorganisms for patent procedures. Furthermore, if any patentable inventions use biological material, the place of origin of the genetic resources must be disclosed in the patent application, and spontaneously the biological material must be deposited in a recognized depository for inspection.[28]

After signing the Convention on Biological Diversity, the Indian government felt the need for a law on biological resources in India. The Biological Diversity Act of 2002 was passed as a response to this need by the Parliament to develop legal mechanisms for the protection of biological diversity in India. The Biological Diversity Act is a significant step towards conserving India's biological heritage while ensuring that local community's benefit from the resources they have traditionally managed. Its successful implementation is crucial for achieving sustainable development goals and fostering a symbiotic relationship between biodiversity conservation and community welfare.[29]

The Biological Diversity Act of 2002 specifically aims at the preservation and protection of traditional knowledge systems through prior informed consent and fair and equitable sharing of benefits arising out of its utilization through agreements based on mutually agreed terms. The Act also envisages a regulatory mechanism at the national and state levels to regulate the use of biological resources forming the rich heritage of India. Additionally, CBD advocates the protection of traditional knowledge and practices to its member states, and as a consequence thereof, India

27 K.C. Kankanala, A.K. Narasani, and V. Radhakrishnan, Patent System in India: An Overview, Indian Patent Law and Practice, Oxford India Paperbacks (2012)

28 Ibid.

29 Biological Diversity Act, of 2002, Act no. 18 of 2003

developed mechanisms such as the Traditional Knowledge Digital Library (TKDL) to afford protection to indigenous knowledge against biopiracy and other forms of misappropriation.[30]

The interrelationships between the TRIPS Agreement and the CBD have established a complex IPR climate in India. While TRIPS has opened doors for scientific advancement and major technological ventures, the CBD has underscored the significance of manageability and moral contemplations in the utilization of natural resources, particularly plant and animal life. This dynamic continues to evolve as India navigates its development goals alongside its commitments to international agreements.

9. TRADITIONAL KNOWLEDGE DIGITAL LIBRARY: A STEP TOWARDS EFFECTIVE MANAGEMENT OF TRADITIONAL RESOURCES FOR SUSTAINABLE DEVELOPMENT

Traditional Knowledge Digital Library (TKDL) is a joint initiative of the Council of Scientific and Industrial Research (CSIR) and the Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha, Sowa Rigpa and Homoeopathy (AYUSH) to underscore the importance of protection and preservation of traditional knowledge. Business enterprises and firms from developed countries utilize the valuable traditional knowledge and practices of the indigenous and tribal communities of the Global South without appropriate authorization and create products and processes based on them, and create market exclusivity for themselves through patent protection and other forms of IPR. TKDL is an innovative venture of the Government of India to curb this menace.[31]

30 Meghalaya Biodiversity Board, Biological Diversity Act in a Nutshell, https://megbiodiversity.nic.in/sites/default/files/biological-act-nutshell.pdf

31 Ministry of Science and Technology, "*Traditional Knowledge Digital Library Unit"*, Accessed at Traditional Knowledge Digital Library Unit (TKDL) | Council of Scientific & Industrial Research (csir.res.in)

India is lucky to be home to a vast ocean of traditional knowledge, practices and skills in agriculture, land management, forestry, aquaculture, home designing, etc. The value of traditional knowledge is commensurate with its vulnerability to misappropriation by corporate giants for financial gain. In 1995, the USPTO granted a patent to the University of Mississippi Medical Centre for claims over the wound-healing capacity of turmeric. The patent was challenged by the Indian Government as turmeric has been used for thousands of years in India as a medicine and flavoring agent in Indian cuisines. The arguments given by the Indian government were supported by various documentary pieces of evidence in numerous languages like Sanskrit, Urdu, and Hindi, and also excerpts from the Journal of the Indian Medical Association published in 1953. USPTO eventually revoked the patent in 1997 and recognized that the medicinal properties of turmeric are the traditional knowledge of India and can be classified as prior art and therefore not worthy of patent protection.[32]

The time and energy spent in opposing patent claims at USPTO laid the foundation for a robust and proactive mechanism to protect India's traditional knowledge that exists in Sanskrit, Urdu, Hindi and other regional languages and local dialects. The knowledge was translated into languages and forms that could be easily accessed and understood by patent examiners worldwide. TKDL integrates the diverse fields of traditional knowledge like Ayurveda, Unani and Yoga with modern advancements in science and technology to allow patent offices in the United States of America, the European Union, Japan and other thirteen patent offices to easily access Indian traditional knowledge online to prevent granting of patents to those innovations that have been developed using Indian traditional knowledge.[33]

32 Aditya Singla, "Protection of Traditional Knowledge in India with Reference to Neem, Turmeric, Basmati Rice" *Research Gate* 8 (2020).

33 Ministry of Science and Technology, "*Traditional Knowledge Digital Library Unit"*, Accessed at Traditional Knowledge Digital Library Unit (TKDL) | Council of Scientific & Industrial Research (csir.res.in)

9. CONCLUSION

Traditional Knowledge is a valuable asset to mankind. It has a magnificent role to play in various streams of sustainable development like environment conservation, ecological stability, cultural preservation, biodiversity protection, resource management, sustainable farming, climate change adaptation and healthcare development. It is, therefore, crucial to protect traditional knowledge through the contemporary IPR regime. Traditional Knowledge Databases need to be developed extensively to prevent unauthorized access and commercial exploitation of indigenous knowledge and practices. Moreover, adequate benefit-sharing mechanisms need to be established when traditional knowledge and practices are used by big corporate players for industrial purposes. Overall, the intellectual property regime lays down an efficacious apparatus for bolstering initiatives towards sustainable development that need to be utilized adequately by present generations.

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