Page 844 - 859 **DOI:** *https://doij.org/10.10000/IJLSI.11984*

INTERNATIONAL JOURNAL OF LEGAL SCIENCE AND INNOVATION

[ISSN 2581-9453]

Volume 3 | Issue 4

2021

Innovation of Genetic Resources, Traditional Knowledge and its Rights: Trestle of Intellectual Property Rights

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ABSTRACT

The inventions have revolutionized the world and made life easier. These inventions are being done not only in fields of machinery but also in food, medicines and cosmetics. For these, genetic resources and traditional knowledge have been used to their full potential and properties. The inventions that derive from biological resources are eligible for patent grants. The genetic resources not being intellectual property cannot be patented. There has been history of monopoly over plant varieties and use of such products. However, they have to be novel creations. These genetic resources and traditional knowledge are obtained over a long period of time, but they do not come free of cost. There are several negative aspects that are to be dealt with for the advancement of society. Biopiracy is one such disadvantage. It is the use of such resources and the knowledge related without fair compensation. The trade and share of resources has helped the world develop over centuries but the question is that whether these resources are owned but individuals or nation states. Who has the proper rights to exploit them and under what circumstances?

This paper deals with the question of proprietary right over the genetic resources and traditional knowledge. This paper also throws light on the problem of biopiracy and its effects. Whether the Conventional Laws and Indian Laws fulfill the requirement for protection of Genetic resources and Traditional Knowledge? What measures should be taken up ahead with the changing times?

I. EXORDIUM

"Trade is the oldest and most important economic nexus among nations. Indeed, trade along with war has been central to the evolution of international relations."

- ***Robert Gilpin.***

The world has traded material that they obtained from nature since time immemorial. And

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 [ISSN 2581-9453]

even in recent times, trade is one of the most significant manners of economy regulation. But for the development of the nation states it is important to introduce advancements into the available resources to increase the efficacy. The knowledge so required has to follow the norms such as novelty, utility and non-obviousness. The native populace of the globe holds immense knowledge about their environment. The years of living in a particular region and coping up with the nature to survive has let to evolution of such knowledge that is not known to people of other region. It is obvious that every species of the biological diversity cannot be found and grown on every piece of land; this knowledge takes years to be found and skilled. It is passed on from generation to generation for improving the standard of living. This knowledge is expressed in the form of hand written manuscripts, dances, culture, folklores, music, food techniques, art etc. The elders are often regarded as the trees of such knowledge and this is termed as Traditional Knowledge. The home remedies of grandmas and great grandmothers are still used for treatment of several diseases. Such other forms of knowledge may be Ayurveda, Unani form of medicine, acupuncture, etc. Traditional knowledge (TK) is know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity.[2] Even after being an important resource, there is not one internationally accepted definition for Traditional Knowledge. Traditional Knowledge includes both the codified (documented) as well as non-codified information (not documented but may be orally transmitted).

II. GENETIC RESOURCES

Genetic resources, as elucidated by World Intellectual Property Organization are "genetic material of actual or potential value. Genetic material is any material of plant, animal, microbial or other origin containing functional units of heredity. Examples include material of plant, animal, or microbial origin, such as medicinal plants, agricultural crops and animal breeds."[3]

It may incorporate any biological substance that encloses the foundation of heredity. Such objects may include plants, animals or any biological being that is capable of carrying such genetic medium. These materials are essentially natural and not human made.

The World Intellectual Property Organization has segregated it policy into diverse subjects.[4] Genetic recourses, however, form a component of Traditional Knowledge of normative works. It is the knowledge that is passed on over generations from parent to offspring.

[2] Traditional Knowledge (wipo.int) (July 7, 2021, 06:14 PM) https://www.wipo.int/tk/en/tk/
[3] Genetic Resources (wipo.int) (July 7, 2021, 09:15 AM) https://www.wipo.int/tk/en/genetic/
[4] (fao.org) (July 7, 2021, 09:23 AM) http://www.fao.org/wiews-archive/docs/Resolution_8_83.pdf

Article 2.1 (a) of the Food and Agriculture Organization of the United Nations, International Undertaking on Plant Genetic Resources (1983) describes the expression as the reproductive or vegetative propagating material of the following categories of plants:

i) cultivated varieties (cultivars) in current use and newly developed varieties;

ii) obsolete cultivars;

iii) primitive cultivars (land races);

iv) wild and weed species, near relatives of cultivated varieties; and

v) Special genetic stocks (including elite and current breeders' line and mutants). The International Undertaking does not refer to 'functional units of heredity.' [5]

The genetic resources in ordinary words are genes that determine the characteristics of an organism and give shape and structure to life. It does not only hold an actual or potential economic value but is also important to evolve life and life guards to keep up with the evolving technology of the world. All these definitions revolve around the idea of these genes or genetic material, highlighting the essence of life and preservation.

Genetic resources deal with human existence but also the improvement in quality of life and change in the food, medicine, and new species of different organic races, textile and saving life through such needed inventions using the resources. The knowledge of alteration, mixing and use of such resources has been acquired through years in many forms which may include experiments in laboratories to survival techniques in remote areas of the world. ON one hand the labs carry out experiments such as gene engineering and on the other hand the techniques used by the indigent people called the traditional knowledge. Traditional knowledge (TK) is know-how, skills and practices that are developed, sustained and passed on from generation to generation within a community, often forming part of its cultural or spiritual identity.[6] Even after being an important resource, there is not one internationally accepted definition for Traditional Knowledge. Traditional Knowledge includes both the codified (documented) as well as non-codified information (not documented but may be orally transmitted).

Genetic resources are exploited in a range of field including agriculture, food production, cloth industries, pharmaceuticals and animal breeding. Numerous objects of daily life are produced using such cultures of genetic heredity. It may have a commercial as well as non commercial facet attached to the use of such materials.

[5] Resolution_8_83.pdf (fao.org) *Supra* note 4
[6] Traditional Knowledge (wipo.int) *Supra* Note 2

These resources can be classified in following broad groups:

- Plant genetic resources
- Animal genetic resources
- Forest genetic resources
- Aquatic genetic resources and
- Genetic resources of micro-organisms and invertebrates

The traditional resources not only are a method of survival and art but also provide identity to the people all over the globe. When a person refers to acupuncture it is obvious that he is referring to the ancient Chinese method of needling the pressure points on body. Similarly yoga has become a symbol for India.

India is home to 91,000 species of animals and 45,500 species of plants and hold 7-8% of world's biodiversity. It ranks 9th in plant variety richness and is a mega-diversity[7]. It is considered to be the land of origin of crop species such as cotton, cucumber, egg plant, sesame, turmeric, ginger, pepper, banana, bitter gourd, okra, coconut, cardamom, jackfruit, sugarcane, bamboo, indigo, goose berries, besides hundreds of species of wild crop relatives and forest trees. The cereals in India date back to before the Indus valley civilization. According to the census of 2011, India is home to 104,281,034 tribal people[8].

With the vast amount of Traditional Knowledge comes the setback of biopiracy. Biopiracy is the use of Traditional Knowledge without any compensation to the indigenous communities. This knowledge is often used by the developing and developed countries for their own benefit in their name. Since these resources are usually available in regional language it is not very highly recognized by the states.

The topic of Genetic resources became an important point of thinking during various international conventions due to increased number of developments and researches in this field. The very first convention that revolved around genetic resources is International Convention for Protection of New Varieties of Plants in 1961. Held in Paris, it was later revised in 1972, 1978, and 1991 to keep up with the changing pace of the technological advancement in field of plant variety.[9]

[7]Biodiversity in India (indiabiodiversity.org) (July 11, 2021, 06:14 PM) https://indiabiodiversity.org/page/4246006
[8] Tribal Profile.pdf (July 11, 2021, 02:29 PM) https://tribal.nic.in/ST/Tribal%20Profile.pdf.
[9]UPOV Lex (July 12, 2021, 07:47 PM) https://www.upov.int/upovlex/en/upov_convention.html.

III. PROPRIETARY RIGHTS OF GENETIC RESOURCES

Genetic resources cannot be defined as intellectual property since it is the progeny of nature and cannot be protected by the laws concocted regarding intellectual property rights. However, the further inventions based on the use of such resources can be protected under such laws. These advancements shall be based on the novelty of idea, utility and non-obviousness.

Genetic resources being a part of traditional knowledge cannot be owned but a certain person. Till the late 20th century, the biological resources were considered to be in "public domain" and were not owned by an individual, individuals or states. Every person had equal rights over such resources. It was often that in agricultural communities sharing and exchange varieties of plants and their seeds would take place. However, it was not until 2001 that farmers' rights were introduced in India. This legislation also provided protection to plant varieties and introduced rights of communities and gene fund in to the country. There have been several instances that were contrary to this belief of resources in public domain. The colonizers in various parts of the world cornered the market of several plant species. Cinchona, plant species was used by Quechua Indians as medicine for a long time before the Spanish conquest. This plant is grown for 12 years before its bark can be extracted for use. It was monopolized as Jesuit's powder as cure for malaria during the mid-17th century. Later in 19th century, the Dutch and British tried to monopolize it in India and Ceylon. A large number of trees were exported to the countries.[10] The late 20th century saw an upsurge in the biotechnology and bio-prospecting. The development in the section has increased drastically. Changing gene sequence, biotechnology and cloning have helped boost the economy and bring about revolution. In 1912, in U.S, a patent was awarded for purified adrenaline.[11] Since pure adrenaline was not already present in nature, the invention satisfied the criteria of novelty, non-obviousness, and utility under the patent law.

International union for protection of new varieties of plants provides with another measure of protecting intellectual rights over a plant. Plant Variety Protection (PVP) can be received if a cultivar has distinct, uniform, and stable properties. This also means that the plant variety shall be non-obvious and not produced through single gene crossing which is already known and consist only insignificant modifications. In this case, the ownership remains with the owner of the original cultivar. This also provides exception to farmers and breeders to harvest and cultivate the crops using such seeds.

[10] Louise Frost and Alistair Griffiths, Plans of Eden, 6 (Alistair Hodge, 2001)
[11] Parke-Davis & Co. v. H.K. Mulford Co., *189 F. 95, 103 (C.C.S.D.N.Y. 1911)*

IV. BIOPIRACY

According to World Intellectual Property organization Biopiracy is an expression that explains biodiversity-related patents that do not meet patentability criteria or that do not comply with the CBD's obligations – but this term has no precise or agreed meaning.[12]

In simple terms, it is the robbing of traditional knowledge from poor indigenous or local communities without compensating them fairly and appropriately. This may be for the commercial use by developed or developing countries for the benefit of their economy. The expropriation of biological resources associated with traditional knowledge through patent was the method that became to be known as biopiracy. Cinchona, plant species was used by Quechua Indians as medicine for a long time before the Spanish conquest. This plant is grown for 12 years before its bark can be extracted for use. It was monopolized as Jesuits powder as cure for malaria during the mid 17th century. Later in 19th century, the Dutch and British tried to monopolize it in India and Ceylon. A large number of trees were exported to the countries.[13] In 1983, Neem bark was patented for its medicinal traits in US by Terumo Corporation. Robert Larson in 1985 obtained a patent for preparation of Neem extracts which had been used in India since time immemorial.[14] phyllanthus amarus Schum.et Thonn., commonly known as Amla in India was used for a long time as an ayurvedic medicine for many diseases such as Jaundice. The patents for its ayurvedic uses were taken in US and UK.[15]

Biopiracy is often confused for Bio-prospecting. Bio-prospecting may be described as the development and commercialization of the genetic material for the betterment of humankind. It involves research, extraction and exploration of the biological material and is done in a specific manner. As stated above biopiracy is the illegal use of such resources. However, bio-prospecting can be an agreement for the purpose of mutual benefit of both parties. Biopiracy in the name of bio-prospecting has become common.

Since traditional knowledge is found in regional languages it is difficult to protect them by any state or community, making them misappropriation prone. It has become easy to stripe the indigenous communities of their cultural identities. The amount paid to the communities is

[12] Traditional Knowledge and Intellectual Property – Background Brief (wipo.int) (July 15, 2021, 02:14 PM) https://www.wipo.int/pressroom/en/briefs/tk_ip.html.
[13] Bio-piracy of Traditional Knowledge (tkdl.res.in) (July 15, 2021, 02:14 PM) http://www.tkdl.res.in/tkdl/langdefault/common/Biopiracy.asp
[14]BBC NEWS | Science/Nature | India wins landmark patent battle (July 15, 2021, 02:14 PM) news.bbc.co.uk/2/hi/science/nature/4333627.stm.
[15] Srinivas Burra, R. Rajesh Babu, Locating India in the Contemporary International Legal Order 154 (Srinivas Burra, R. Rajesh Babu Ed., Springer (India) Pvt. Ltd. 2018)

insufficient compared to the unfair revenue earned by patentees. All because it's available in public domain the corporations feel that communities have given up all rights on them. The patent system of many countries provides for disclosure of inventions but the challenge faced by these laws it that many of the genetic resources are not in knowledge of the world as they are only available in regional areas. Also the inventors do not think it fit to mention their source of learning the use of such knowledge until it lies challenged in court.

Case of Neem

In 1994, a patent was granted by the European Patent office to the W.R. Grace Company and Agriculture department of US for extraction of Neem oils to be used for its anti fungal property. Before the WR Grace Corporation could patent, the idea of extraction of bark of the trees belonged to Robert Larson who was issued patent for the same in US. The patent was sold by him to the WR Corporation or the extraction process of the Neem extracts. Later, the company continued its research in the same field in collaboration with P.J. Margo Pvt. Ltd. in Indi. In 1995, a legal opposition against these patents was filed by Indian farmer representatives and other NGOs on the contention that Neem has been used in India for medicinal purposes since ancient times. However it was not until May 2000, that the above said patent was revoked by the European Patents office. [16]

Case of Turmeric (Curcuma longa)

Popularly known as "Turmeric" or "Haldi", it has been used in India for ages for treating wounds and weakness, dyeing and cooking spice. The rhizomes of the spice have medicinal properties that can heal and disinfect wounds. However, US PTO granted patents to two Indian scientists for the same. It was challenged by Council of Scientific and Industrial Research (CSIR) on the grounds of traditional skill. The criteria of novelty was not satisfied since the used of turmeric had been made for various purposes in India for centuries. This was further supported by ancient Sanskrit literature. The patent was eventually revoked by the US PTO on the ground of not satisfying the idea of novelty creation. [17]

Basmati Rice case.

In 1997, US patent Office granted patent to an American company known as Basmati Ricetec. Inc., for the calling aromatic rice grown outside India as basmati. This provided the company not only to grow the rice but also name it as basmati for the purpose of Export. As a repercussion, India will lose about 10% of its total rice export to US. Not only that but also it

[16]. Bio-piracy of Traditional Knowledge (tkdl.res.in) *Supra* Note 15.
[17]Bio-piracy of Traditional Knowledge (tkdl.res.in) *Supra* Note 12.

will lose its position in the international trade in European countries and other parts of the world where the exports were earlier made from India. This rice was specifically categorized as grown in the Himalayas and the northern states of Indian and parts of Pakistan. in response to this the Government of India asked the US PTO to reexamine the patent in order to prevent the rights of Indian farmers and export that held Indian economy. Before this case, US patent office had also granted patent to the Indian scientists for turmeric. On the similar grounds on non-novelty it was contended that these rice are already in existence and cannot be patented.

According to the associated chamber of commerce, basmati rice is traditionally grown in India and Pakistan and hence granting of patents would violate Geographical indication Act, under TRIPS. The claims were later withdrawn by the American company after the Reexamination was filed. [18]

Colgate Palmolive

European Patents office granted patent to Colgate Palmolive for herbal toothpaste and Nutmeg mouthwash. Colgate Palmolive claimed that their revolutionary "red herbal dentifrice" used red iron oxide, camphor, spearmint, black pepper and clove, which is dissimilar to components in the long-established toothpaste. However, the recipe used by the company was already a part of Indian culture for centuries as a product of dental health. This formula lacked the idea of novelty creation and non obviousness as it was a part of traditional knowledge. Association of Manufacturers of Ayurvedic Medicine confronted the patent as false because the elements dated back to the distant past. The patent was revoked on contention of the Indian state. [19]

Disclosure of specification of patents

The genetic resources are not considered as intellectual property unless they have the idea on novelty. They conform to the laws laid down for the grant of patents. Such inventions being protected under patents shall also conform to the norm of disclosure of specifications of the invention. Also a patent shall not be granted if the idea already exists. in the cases above, patents were granted without knowledge of the specification which are usually suggested in Indian as well as European law. It was mostly in cases of US patents that promoted biopiracy. Even when most of the creations were already existent in a part of world where they acquired the knowledge.

[18] Bio-piracy of Traditional Knowledge (tkdl.res.in) *Supra* Note 12.
[19] Bio-piracy of Traditional Knowledge (tkdl.res.in) *Supra* Note 12.

Effects of bio piracy

The concept of biopiracy is age old and it is as notorious in its nature as a real theft of someone's property. It takes decades and centuries to learn and develop a skill by the original users for their survival but only a fraction of the original time to rob it. Biopiracy is not only a treat to the indigenous communities of the society but it also holds many negative impacts on the world. Starting with the indigenous society, they lose their antique methods of living with nature for no compensation. This doesn't to change their position for better. Apart from them the disturbance caused to ecology is enormous. In India where the number of rice varieties used to be approximately 3000 are now reduced to 10 varieties. [20] This loss to the biodiversity cannot be reversed. It also affects the farmers and breeders.

V. CONVENTIONAL GUARDIANSHIP

The first convention related to the genetic resources, International Undertaking on Plant Genetic Resources (1983), was held in Paris for the first time. 74 nations were a party to this convention. It laid down rules for the proper functioning of organizations related to the plant resources and the domestic laws governing protection of such species of plants. The convention also established that the plant must have characteristics of uniformity and stability but also should be distinct. It also conferred Intellectual Property Rights on the breeder of plants. India was not a member of this convention owing to its development and large number of farmers. This convention was revised in 1992, 1994, 1996.

In 1992, Convention on Biological Diversity gave the definition of biological resources distinguishing it from the genetic resources. Article 2 of the convention states as under

"*Biological Resource includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity*."[21]

Genetic resources, therefore, form one of the subcategories of biological resources. It established 3 main objectives under Article 1 of the convention;

i. The conservation of biological diversity

ii. The sustainable use of the components of biological diversity

[20]Microsoft PowerPoint - Biopiracy related to Traditional Knowledge & Patenting issues.ppt [Compatibility Mode] (birac.nic.in) (July 15, 202, 02:14 PM) https://birac.nic.in/webcontent/dib.pdf.
[21] Convention Text (cbd.int) (July 15, 2021, 02:28 PM) https://www.cbd.int/convention/articles/?a=cbd-02;

iii. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.[22]

Article 15 of the CBD speaks regarding the Access to Genetic Resources stating that the distribution of genetic resources will be subject to the authority of the national legislation and sovereign rights of each party State to the convention[23]. This access when granted will be on Mutually Agreed Terms (MAT) and subject to the provisions of this article 15. It will proceed with only a Prior Informed Consent (PIC) unless otherwise determined by any such party to the contract.

Nagoya Protocol, a supplementary agreement to the convention of biological diversity suggested a transparent legal framework for efficient functioning of the main objectives of the convention. It also regulates access to genetic resources related to traditional knowledge. Adopted on 29th October, 2010, it granted special guidelines for access and benefits and sustainable use of the genetic resources. Article 7 specifically highlights the importance of domestic laws and measures introduced though them. It also suggested attaining a prior consent or approval of the indigenous communities[24].

In 1994, India became a signatory to the CBD convention. A special Biological Diversity Act, 2002, statute was enacted for the preservation of biological diversity, and provides mechanism for equitable sharing of benefits arising out of the use of traditional biological resources and knowledge.

Article 27.3(b) of TRIPS agreement talks about plant and animal inventions covered by patents. This article provides them protection. It empowers the legislations to exclude some plant varieties and animal species and biological processes. Plant varieties should be qualified for protection through patent protection or by Sui generis, or a combination of the two.[25] The main objectives of TRIPS are to recognize national systems and their working for the protection of intellectual property rights of individuals and development of such intellectual properties.

Article7 of the TRIPS agreement states that the defense of intellectual property rights should be able to add to the encouragement of technology and new inventions and to the transfer and dispersal of technology. The mutual advantage of producers and users of technological

[22] Convention Text (cbd.int) (July 15, 2021,02:14 PM) https://www.cbd.int/convention/articles/?a=cbd-01;
[23] Convention Text (cbd.int) (July 15, 2021, 01:56 PM) https://www.cbd.int/convention/articles/?a=cbd-15;
[24] nagoya-protocol-en.pdf (cbd.int) (July 15, 2021, 11:14AM) https://www.cbd.int/abs/doc/protocol/nagoya-protocol-en.pdf;
[25] WTO | intellectual property (TRIPS) - Reviews, Article 27.3b, traditional knowledge, biodiversity - background (July 15, 2021, 06:42 PM)
https://www.wto.org/english/tratop_e/trips_e/art27_3b_background_e.htm;

knowledge should go hand in hand and should contribute to social and economic welfare.[26]

Article 27 of the agreement focuses of "technological neutrality". It puts forth the norms of novelty of creation, inventive step or non-obviousness, industrial applicability, sufficiency of disclosure of the invention. It establishes certain exceptions to these inventions:

i. To protect public morality

ii. Medical treatments

iii. Some plants and animals and biological processes used to obtain them.[27]

Article 29 of the agreement establishes disclosure of specifications. It votes of the complete and sufficient disclosure of the specifications of the inventions and urges the parties to explain the "best mode" of carrying out the invention. It further that the applicants are required to disclose any foreign applications and grants.[28]

India having signed TRIPS agreement, which became binding in 2005, is bound to value its principles and objectives for the protection of Biodiversity. It also believes in "National treatment of nationals of other nations"

VI. LAW IN INDIA

Indigenous tribes and traditional knowledge has been intertwined with Indian culture for a long time. There are innumerable latent ingredients that the country and the world are unaware of. It has been home to many biological species and resources. To prevent this knowledge and resources from falling into the hands of an inappropriate user, several laws have been enacted which guarantee protection of the heritage and the rights of tribes and indigenous people.

The Biodiversity Act, 2002 deals with the various genetic resources and their development. Under section 2 (c)[29] of the act, the legislature has defined biological resources in a similar manner to WIPO. Biological resources consist of plants, animals and micro organisms or parts thereof, their genetic materials or by-products which have an actual or potential value attached to them. It expressly excludes value added products and human genetic material. This act formulated a statutory body called the national biodiversity authority which plays an

[26] WTO | intellectual property (TRIPS) - Reviews, Article 27.3b, traditional knowledge, biodiversity - background *Supra* note 24
[27] WTO | intellectual property (TRIPS) - Reviews, Article 27.3b, traditional knowledge, biodiversity - background *Supra* note 24
[28] WTO | intellectual property (TRIPS) - Reviews, Article 27.3b, traditional knowledge, biodiversity - background *Supra* note 24
[29] Biodiversity Act, 2002, §. 2 (c) (India)

important role in allocation of these biological resources for research and commercialization, providing them with protection against being used by bio-pirates and people who get patents for the same without really contribution to any research and development. This authority may also advice the central government on the matters related to sustainable use and development of biological diversity, preserve the resources and equitable benefits arising out of the use of biological resources, advice the central government in selection of a heritage sight of biological importance and take measures necessary in favor or against the grant of intellectual property rights. The transfer of biological resources shall not take place without the approval of the state biodiversity boards or the national biodiversity authority.[30]

The Patents Act, 1970, in section 3 (p) disqualifies as an invention within the meaning of the act, any invention which is traditional knowledge or which is an aggregation or duplication of known properties of traditionally known component or components.[31] The rational being this is simply that a traditional knowledge or any invention with minute changes in the efficiency of such traditional knowledge do not satisfy the criteria laid down in the Indian IP Law, i.e., novelty and non- obviousness.

The Protection of Plant Varieties and Farmers' Rights Act, 2001 incorporated the traditional plant species, farming techniques and biological resources by the farming community in the ambit of section 2 of the act[32]. Other Indian statutes such as geographical indications act, 2000, provide protection to the biological resources and traditional knowledge as it provides the products from a particular area of the country. According to WIPO, "Products identified by a geographical indication are often the result of traditional processes and knowledge carried forward by a community in a particular region from generation to generation. Similarly, some products identified by a geographical indication (GI) may embody characteristic elements of the traditional artistic heritage developed in a given region, known as "traditional cultural expressions" (TCEs). This is particularly true for tangible products such as handicrafts, made using natural resources and having qualities derived from their geographical origin."[33] However, the Protection of Plant Varieties and Farmers' Rights Act, 2001 and geographical indications act, 2000 do not expressly mention the protection provided to the traditional knowledge.

The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights)

[30] Biodiversity Act, 2002, S. 20 (India)
[31] The Patents Act, 1970, S.3 (India)
[32] The Protection of Plant Varieties and Farmers' Rights Act, 2001 S.2 (India)
[33] Frequently Asked Questions: Geographical Indications (wipo.int) (July 17, 2021, 06:28 PM) https://www.wipo.int/geo_indications/en/faq_geographicalindications.html

Act, 2006, in short known as the Forest Rights Act, ensures rights of indigenous communities, scheduled tribes and forest dwellers the right of access to biodiversity, intellectual property and traditional knowledge[34] related to biodiversity and cultural diversity for their livelihood and preservation of culture and heritage that has been passed to them by their previous generations.

Schemes such as traditional knowledge digital library have been passed for the conservation and protection of the rights of indigenous populace of the country.

VII. ANALYSIS

Through the world trade in the present times it is clear that the genetic resources are not limited to the boundaries of the nations they are born in. they are shared, exchanged and traded for their properties. The import and export of resources has increased due to their commercialization and requirement in advancing the society. These sources not only include the things that are born in nature but also form element of a larger topic of traditional value. Genetic resources are one of the most important parts of these indigenous cultures and due to the steeling of their knowledge and patents that are being granted in the field, these communities are derived of their rights over such resources. Even after the introduction of various regimes they are still not fully protected because of the lack of awareness of such laws. The knowledge may be spread in a very small portion and may not be transmitted to other communities in the same area. The fact that honey could be used for medicinal and antiseptic purposes was not known to a large section of the world for a long time. Some of its uses are still less known.

There have been many conventions in relation to the protection of these sources, however, the envelop does not fully cover the natural resources. In India, pharmaceuticals were not included in patents unlike the other fields such as food, drugs and other medicines until the amendment of Patents act. The traditional knowledge can be given protection under the WIPO; however, it cannot be patented by anyone due to its antiquity. There are issues taken up by TRIPS agreement that are still under debate. Such topics may include:

Disclosure as TRIPS obligation: Countries have urged TRIPs to include disclosure of patents with complete specifications as an obligation to the conditions of TRIPS.

Disclosure through WIPO: it was proposed by Switzerland to amendment to the policies of WIPO's Patent Cooperation Treaty. It was suggested that the applicant should disclose the

[34] The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, § 3(1) (k) (India)

source of their knowledge of inventions. This could prevent fraudulent attempts to obtain the patents in cases of genetic resources and traditional knowledge.

Use of national legislations such as contracts instead of disclosure obligation: suggested by the United States, it was proposed that instead of obligatory disclosure, more heed to be given to the benefit sharing and this could be achieved through contracts and national statues.

The cases of biopiracy have increase in the last century, or it can be said that they have become more noticeable due to the introduction of wide roofed Intellectual property rights. The need of the hour is to have better regulation globally and not nationally. The cases above have proven that the biopiracy can be a result of lack of knowledge if the substances to other countries however this doesn't make genetic material a property of any person. It is accessible to all for introducing novel creations and something that is not seen by the world before. It the modern world of biotechnology and cloning, the key to environment cannot be handed over to a group of individuals. However, if the person through is intellect has come up with a certain knowledge and use of a material which has not been known before, it would not be inappropriate to prevent their rights. In the community of farmers, it has been an antique culture to modify and share crops and seed for a better yield; however this does not stop the farmers and breeder from having their rights protected under laws associated with them. Furthermore, for the encouragement of such new varieties and species, rights and helps such as funds have been granted by the governments for research and protection of biodiversity.

From further observation, it is also clear that unlike India and European legislations, there are still several countries where the idea of disclosure of specification is still in its primitive age and needs development. It would not be wrong to say that to exploit the biodiversity of the under developed and developing countries, developed countries are leaving no stone unturned for their benefits. Resulting in biopiracy, it is not only infringing the rights of the traditional communities but also of the farming and breading communities. It is also promoting the irreversible damage to the biological diversities which is harmful for the health of nature.

Enough stress cannot be laid on the disclosure of the specifications of the inventions. They prove of its importance has been established time and again since the 18th century. The suggestions of countries worldwide have also declared that the need to protect the genetic resources and traditional knowledge can only be fulfilled by introducing a more efficient system of disclosure. It is also obvious that these disclosures need to be complete and specific in the working of the inventions. This will not only ensure the minimization of biopiracy but will also encourage the inventors to work with more efficacies. Furthermore, this will reduce

the fraudulent attempts to obtain the patents related to genetic resources and traditional knowledge.

In India, many acts related to Intellectual Property rights partially cover the field of traditional knowledge. However, no act has been enacted that provides complete protection and the subject matter still lies in the public domain. Out of several challenges faced by traditional knowledge, one of the challenges is the identification of traditional knowledge. At times, it is known by practical use and documentation but at times it is only known to very few people and documentation is not understandable due to barriers in language or the documentation has been done decades ago that only ruins remain. There are several Indian languages that are no longer known or understood by people in mainstream. Even if such knowledge is patented the community would seldom know of about the occurrence. This is also a result of lack of awareness and low literacy rates in developing or less developed countries. The legislations in India are rather futuristic and prevent misuse of traditional knowledge and bio resources for future generations. The emphasis is laid entirely on the commercial use of the research and development. It cannot be considered completely as negative since India is a growing economy and heavily relies of research and development for economic boost. The legislations if seen collectively are effective in prevention as well as appropriate use by the mainstream as well as people who have relied on biological resources and forests for generations.

In 161st report of Department Related Parliamentary Standing Committee on Commerce "Review of the Intellectual Property Rights Regime in India[35]", the committee suggested that the awareness about the traditional know ledges and related intellectual property rights be made in the remote areas such as the tribal hilly areas and North- Eastern states. It also stated that Section 3 (p) of the patents act, 1970[36], will make the Traditional knowledge non patentable and reduces its possibility of improvement and commercialization. The non patentability of many such useful inventions would limit the innovations and hence the provision shall be revised. The report also mentions that the traditional knowledge shall also be registered on form of geographical indications. This report suggests much needed reforms in the Indian Intellectual Property Right regime since there is no Law that deals particularly with the problems associated with the Traditional Knowledge.

VIII. WAY AHEAD

Genetic resources being a part of Traditional resources are prone to biopiracy. These

[35] Rajya Sabha (August 5, 2021, 05:25 PM) https://rajyasabha.nic.in/rsnew/Committee_site/press_release.aspx
[36] The Patents Act, 1970, S.3(p) (India)

resources do not belong to "common heritage" Several negative aspects relate to use of biological resources such as monopoly and reduction of varieties. Several laws have been made to cure these problems. The indigenous communities have been cheated while the revenue through the patents was made in millions. It can be concluded that disclosure of specifications will help control the situation of biopiracy which is usually disguised as bio-prospecting. There is a need to spread awareness about Intellectual Property Rights in every area of the county. Looking at the current needs of protection and innovation, new laws shall be enacted to maximize the potential of available resources to the fullest keeping in view the rights of the proprietors and the Public interest.

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