

Biopiracy: A Threat to Indigenous Rights and Biodiversity

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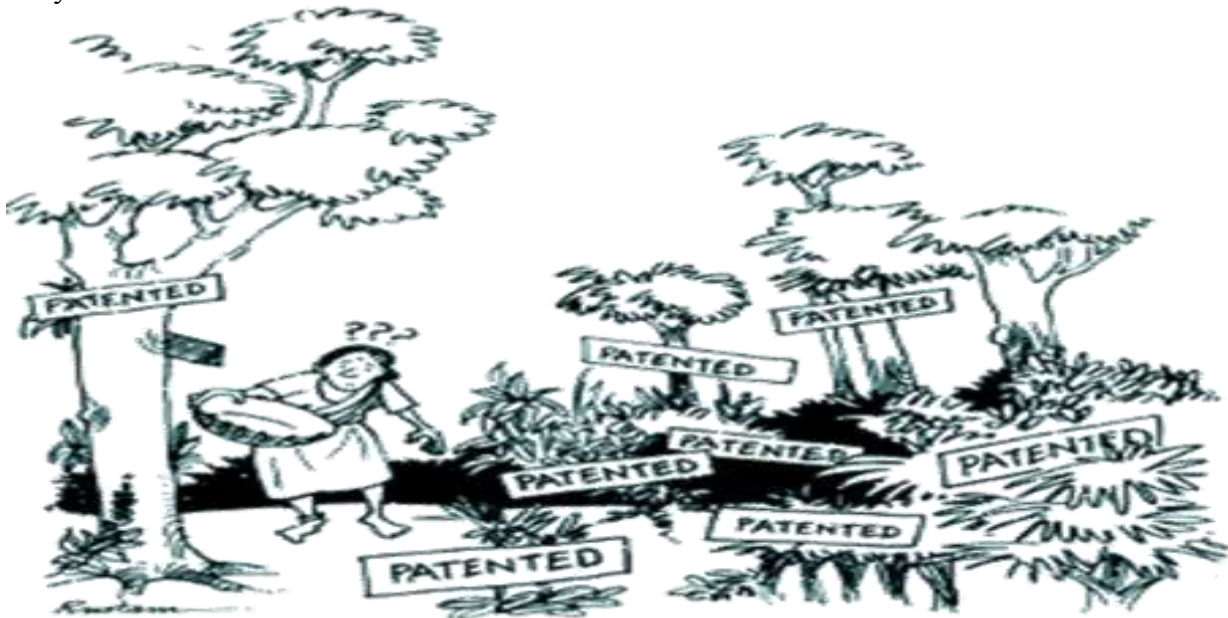
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SUMMARY

Biopiracy refers to the exploitation of biological resources and traditional knowledge by corporations, researchers, and governments without proper authorization or compensation to Indigenous communities. This practice poses a significant threat to Indigenous rights and biodiversity by commodifying natural resources and cultural heritage. Indigenous peoples often hold valuable ecological knowledge developed over generations, yet they are frequently excluded from decision-making processes and denied fair recognition or benefit-sharing. Biopiracy undermines biodiversity conservation by encouraging unsustainable resource extraction and weakening local stewardship. This paper examines the legal, ethical, and ecological dimensions of biopiracy, highlighting case studies that illustrate its impacts on Indigenous communities and ecosystems. It also discusses international frameworks like the Convention on Biological Diversity (CBD) and the Nagoya Protocol, proposing strategies to promote equitable resource management and protect the rights of Indigenous peoples in the face of biopiracy.

INTRODUCTION

India is home to infinite number of very rare species of plants and animals. Nature has gifted the sub-continent with a rich biodiversity. India is also home to well-developed indigenous systems for gainful utilization of these biological resources. For centuries, the people of India have been using these traditional medicines made from animal and plant resources like 'neem', 'pudina' etc. Unfortunately, the rich biodiversity of India and the traditional knowledge of the indigenous people and the local communities is under threat owing to the global economic and social development coupled with the development of science and technology. The term coined to refer to this threat to the biodiversity and traditional knowledge is "Biopiracy".



Biopiracy:

The term biopiracy was coined by Pat Mooney, co-founder of RAFI (Rural Advancement Foundation International), to describe a practice in which indigenous knowledge of nature, originating with indigenous people, is used by others for profit, without authorization or compensation to the indigenous people themselves. From the root words "bio" and "piracy", biopiracy literally means "the patenting of life". Biopiracy involves theft of biological resources (resources from species of plants and animals) and depriving the traditional communities from using such resources and related knowledge. Biopiracy takes place when

biological resources or knowledge is commercially used without the consent of the 'traditional communities' or when IPRs and exclusive rights are claimed over such resources/knowledge.

Biopiracy can include the following:

- a) Obtaining IPRs (usually patents or PBRs) to gain monopoly control over biological resources, related traditional knowledge, or commercial products based on these resources or knowledge, without the consent of, or any benefits going to, the original holders of the resources/knowledge.
- b) Commercially exploiting biological resources or related traditional knowledge without the consent of, or any benefits going to, the original holders of the resources/knowledge.

Traditional Knowledge:

Traditional Knowledge refers to the knowledge which is held by the communities and cultures over generations, and has a deep cultural and economic significance. It includes a diversity of knowledge such as literary, artistic and scientific works, medical practices, agricultural techniques, handicrafts, songs and dances. Traditional knowledge about biodiversity can include the healing, agricultural and sacred properties of plants and animals, as well as conditions of cultivation and processing methods. Traditional knowledge is found in ancient texts, traditional sciences, folklore and in continuing practices and beliefs of communities. Most often it is transmitted from generation to generation as oral knowledge.

Traditional Communities:

Traditional community refers to the communities whose way of life is largely shaped by generations of their ancestors. They are distinct from urban or fast changing societies and lifestyles, maintaining a shared body of cultural, environmental, economic and familial customs that are based on traditional occupations, knowledge, values and social hierarchies. Traditional communities may include farming and fishing communities, forest-dwelling communities, indigenous people, nomadic communities etc.

Original Holders of Traditional Knowledge:

Original holders of traditional knowledge are those traditional communities to whom the origin of the knowledge can be traced back to and who have been making application of the knowledge handed down from time immemorial. In the case of the traditional knowledge that is widely known or in common use (i.e., in the public domain), where the origins of the knowledge cannot be traced to a particular local community, the 'original holder' of the knowledge would be the country of origin of the knowledge, with the government holding it on behalf of its people.

Implications of Biopiracy:

The exploration and investigation of biological resources for new commercial uses (i.e. 'bioprospecting') has been an inherent part of global economic and social development. The problem arises when bioprospecting leads to biopiracy. Biopiracy is a violation of the rights of traditional communities over their biological resources and traditional knowledge. The implications of biopiracy are economic as well as ethical.

Deprivation of the traditional communities from the Profits:

When the biological resources are commercially exploited by the corporations through obtaining of IPRs (or other related rights), the original holders of biological resources and traditional knowledge i.e. the traditional communities, do not get any share in the profits made from commercializing the products based on their resources/knowledge. Due to their low levels of awareness and literacy, they also do not get any recognition for nurturing and developing the resources/knowledge in the first place.

Preventing the traditional communities from commercially using the biological resources:

Business corporations invest heavily in research and development and seek to protect their investments by securing intellectual property rights (IPRs) over biological resources and traditional knowledge. This allows them to have exclusive control over the production, marketing, and sales of new products derived from their research. However, when these corporations, often labelled as "biopirates," acquire IPRs, they effectively prevent the original holders such as indigenous communities who have used

and preserved these resources for generations from commercially exploiting the knowledge or resources. This creates a situation where traditional communities may be forced to purchase products developed from their own resources at potentially high prices, despite their historical stewardship and development of these resources.

Loss of control and access of the traditional communities of their resources/knowledge

Once an IPR is acquired over a particular resource or a knowledge, the IPR holder may dictate the terms of use of the IPR-protected resource/knowledge which might lead to preventing of the traditional communities (who are the 'original holders') from having any control over or access to their resources/knowledge.

Some examples of bio-piracy of traditional knowledge:

Jeevani and the Kani Tribes:

In 1987, scientists from the All India Coordinated Research Project on Ethnobiology (AICRPE) observed that the Kani tribes of south-western India consumed black fruits from a plant, later identified as *Trichopus zeylanicus* var. *travancoricus*, to combat fatigue during forest treks. Intrigued by the plant's properties, the Tropical Botanical Garden Research Institute (TBGRI) conducted further research and discovered that the plant had adaptogenic, immuno-enhancing, and anti-fatigue properties. TBGRI developed a herbal drug named Jeervani, based on the plant, which was released for commercial production in 1995. The institute licensed the drug to Arya Vaidya Pharmacy and agreed to share the license fee and royalties equally with the Kani tribes. A special trust was established to manage these funds for the welfare of the tribe. Additionally, TBGRI trained tribal families to cultivate the plant, providing them with a source of income.

Turmeric (*Curcuma longa* Linn.)

In 1995, two expatriate Indians were granted a US patent for the use of turmeric in wound healing. However, turmeric had been traditionally used in India for centuries for this purpose. The Council of Scientific & Industrial Research (CSIR) in India challenged the patent, arguing that turmeric's medicinal use was not a novel invention but part of traditional knowledge. They provided evidence, including ancient Sanskrit texts and a 1953 journal article, to support their claim. The US Patent and Trademark Office upheld CSIR's objections and ultimately revoked the patent.



Neem (*Azadirachta indica* A. Juss.):

In 1994, the European Patent Office (EPO) granted a patent to the US corporation W.R. Grace Company and the US Department of Agriculture for a method using neem oil to control fungi on plants. However, in 1995, international NGOs and Indian farmers opposed the patent, arguing that neem's fungicidal properties had been known and used in India for centuries, making the patent invalid. In 1999, the EPO agreed, finding that the claimed invention lacked novelty, and revoked the patent in May 2000. In March 2006, the EPO rejected an appeal by W.R. Grace and the USDA, upholding the decision to cancel the patent.



Ponni Rice:

India successfully defended the trademark of "Ponni Rice" in a Malaysian court. Ponni rice, traditionally produced along the Cauvery River in Tamil Nadu and Karnataka, was the subject of a trademark dispute when a Malaysian firm, Faiza Sdn Bhd, attempted to register it as its own brand for rice products. The Agricultural and Processed Food Products Export Development Authority (APEDA) and four others filed a case against the firm in the Malaysian High Court in Kuala Lumpur. The court ruled in favor of India, prohibiting Faiza Sdn Bhd from using the "Ponni" label for its rice products.



Basmati Rice (*Oryza sativa* Linn.):

Rice Tec Inc. applied for the trademark "Texmati" in the UK, but the Agricultural and Processed Food Exports Development Authority (APEDA) successfully opposed it. In the US, Rice Tec was granted a patent on September 2, 1997, with claims 15-17 relating to rice grains similar to Indian Basmati rice. APEDA, using evidence from the Indian Agricultural Research Institute (IARI) and evaluations by scientists from the Central Food Technological Research Institute (CFTRI), challenged these claims. The evidence included grain characteristics and a germplasm collection from the Directorate of Rice Research. Following a re-examination request filed on April 28, 2000, Rice Tec withdrew claims 15-17 along with claim 4.

**Kava (*Piper methysticum* Forster):**

Kava, a significant cash crop in the Pacific, valued for its use in traditional ceremonies, has over 100 varieties, primarily grown in Fiji and Vanuatu. In North America and Europe, Kava is patented for various uses, including by the French company L'Oreal, which patented its use for reducing hair loss and stimulating hair growth. Separately, the Coordinating Body of Indigenous Organisations of the Amazon Basin (COICA) protested against a patent granted to Loren Miller for Ayahuasca, a plant used by Amazonian tribes for generations in traditional medicine. They argued that the patent wrongly appropriated indigenous knowledge. On November 3, 1999, the US Patent Office revoked the patent. However, on April 17, 2001, the inventor successfully had the patent rights restored after convincing the US Patent Office of the originality of the claims.

**Ayahuasca (*Banisteriopsis caapi* Mort.):**

For generations, Amazonian shamans have used the bark of *B. caapi* Mort. to make Ayahuasca, a ceremonial drink used in religious and healing rituals. In 1986, American Loren Miller obtained a US Plant Patent for a variety of *B. caapi* Mort. he named "Da Vine," claiming it as a new and distinct variety due to its flower color. The Coordinating Body of Indigenous Organisations of the Amazon Basin (COICA) protested, arguing that Ayahuasca had been used traditionally by indigenous tribes for centuries, and the patent wrongly appropriated this knowledge. The US Patent Office revoked the patent on November 3, 1999, but later, on April 17, 2001, reinstated Miller's patent rights after he convinced them of the originality of his claims.

**Efforts to prevent Biopiracy:**

The Convention on Biological Diversity (CBD), 1992 was one of the first measures taken by the international community towards prevention of biopiracy and safeguarding the interests of the traditional communities and of the States over their natural resources. The CBD was one of the key agreements adopted by world leaders at the 1992 United Nations Conference on Environment and Development (also known as the 'Earth Summit') in Rio de Janeiro. The CBD came into force in December 1993 and till date has been ratified by 176 countries. The main goals of the CBD are the conservation of biodiversity, sustainable use of biological resources, and the equitable sharing of benefits arising from the use of biological resources.

a) **Sovereign control:** It was agreed by each contracting party (country) in the CBD that states have sovereign rights over their own biological resources. 'Recognizing the sovereign rights of States over their natural resources, the authority to determine access to genetic resources rests with the governments and is subject to national legislation.'

b) Equitable benefit sharing:

One of the main objectives embodied in the CBD is sharing equitably, the benefits arising from the use of traditional knowledge, innovations and practices relevant to the conservation of biological diversity and the

sustainable use of its components, with the indigenous and local communities who are the traditional holders of the resources. Their dependence on the biological resources was also recognized.

C) Consent of governments and local communities:

In the CBD, it was agreed that each contracting party shall facilitate access to genetic resources for environmentally sound uses by other contracting parties. Access to genetic resources shall be subject to 'prior informed consent' of the contracting party providing such resources. Access shall be granted on mutually agreed terms.

d) **Access to biotechnological results:** It was agreed that each contracting parties shall share the results of research and development and the benefits arising from the commercial and other utilization of genetic resources with the contracting party providing such resources, on mutually agreed terms. This would facilitate the access to biotechnological results to those countries which are lagging behind in the field of biotechnology, especially the developing and the underdeveloped countries with a rich biodiversity.

e) IPRs should not run counter to CBD objectives:

The CBD recognizes that every contracting party shall ensure that rights with regard to patents and other IPRs related to biological resources and related traditional knowledge should be supportive of and do not run counter to the CBD objectives.

Indian Legislations:

In India, there are various laws which relate to IPRs and which are especially concerned with the protection of biodiversity and traditional knowledge. The main laws which relate to IPRs, biological resources and traditional knowledge are includes the Biological Diversity Act (BDA), 2002, the Protection of Plant Varieties and Farmers' Rights Act, 2001, the Geographical Indication of Goods (Registrations and Protection) Act, 1999 (hereinafter referred to as the GI Act, 1999) and the Patents Act, 1970 (as amended in 1999, 2002, 2005).

The Biological Diversity Act, 2002:

The Biological Diversity Act, 2002 was enacted to implement the CBD in India, post ratification. Therefore, its aims and objectives are very similar to those of CBD. The BDA aims to set up decision making bodies at national, state and local levels. The National Biodiversity Authority (NBA) set up at the national level will have the right to grant approval to foreigners wanting to access biological resources and related traditional knowledge and to those who want to apply for patents or other IPRs on innovations based on biological resources and traditional knowledge obtained in India. The NBA will also ensure that granting access to resources also includes equitable benefit-sharing with local communities. The act also provides for various other kinds of benefit sharing with local communities- transfer of technology, monetary compensation, joint research and development, venture capital funds and joint ownership of IPRs. Biodiversity Funds will be set up at national, state and local levels which will receive money from individuals and organizations who access and utilize the biological resources and related traditional knowledge and this fund will be utilized for the benefit of the local communities.

The Protection of Plant Varieties and Farmer's Rights Act, 2001:

It aims to establish an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants. Under this legislation, a plant breeder can acquire a Plant Breeders Right (PBR) on a new variety of plant or seed which it has bred, evolved or developed, if it is distinct, stable, uniform and novel. A plant breeder, after registering the new plant variety with the registrar of the Plant Varieties Registry, gets the exclusive right to produce, sell, market, distribute, import or export the variety. This prevents any other person or organization to sell protected variety of plants and seeds under any brand name thus protecting the rights of the original breeders. Since all new varieties are based on traditional varieties, the plant breeders have to pay money into a National Gene Fund, from which a share will be paid to the farmers as a reward for their traditional knowledge. This ensures benefit sharing with the farming communities, through the National Gene Fund.

The Geographical Indications of Goods (Registrations and Protection) Act, 1999:

It covers agricultural, natural and manufactured goods, where the quality or reputation of the product depends on its geographical origin, i.e. the place where it is grown or manufactured (eg. Tirupati laddoos,

Basmati rice, Darjeeling tea, Kashmiri shawls). The act allows a person or association to register a Geographical Indication (GI) at the Geographical Indications Registry. Registration provides GI protection for a product against infringement of registered geographical indication by an 'unauthorised user. Like PBRs, GI is very useful for protecting products based on collectively held traditional knowledge. It protects authorised users by preventing unfair competition from a person, not an authorised user, who by wrongful representation and designations of the goods indicates or suggests that the goods originate in a geographical area other than the true place of origin of such goods, thus misleading consumers about the geographical origin of such goods.

The Patents Act, 1970:

The Patents Act has excluded traditional knowledge and derived inventions from patentability. Apart from that, it states that the source and geographical origin of biological resources used in the invention must be declared in order to obtain a patent. Failure to provide correct information can lead to the patent being cancelled. Such a provision reduces the risk of biopiracy as it provides recognition to the source and origin of the resources and the traditional communities.

Traditional Knowledge Digital Library (TKDL):

India's traditional knowledge has long been vulnerable to biopiracy, mainly because much of this knowledge is non-codified and transmitted orally, making it difficult to prove prior art. Even codified knowledge is often in regional languages, which global patent offices can't easily access, leading to the wrongful granting of patents on inventions that lack novelty. In 2000, an expert group for the Traditional Knowledge Digital Library (TKDL) estimated that around 2,000 incorrect patents related to Indian medicinal systems were being issued annually. This issue was highlighted by the "turmeric case," where two US-based Indians received a patent for turmeric's wound-healing properties, despite these being well-known in India for centuries. The patent was later revoked after the Council of Scientific and Industrial Research (CSIR) provided evidence from ancient texts. This case underscored the need for a comprehensive database like the TKDL to document and electronically record traditional knowledge, making it accessible to patent offices worldwide and preventing biopiracy.

Contribution of TDKL:

India successfully challenged a Chinese patent bid on the medicinal use of *pudina* (mint) and *kalamegha* (andrographis) for treating avian influenza. On February 25, 2010, the European Patent Office (EPO) planned to grant a patent to the Chinese company Livzon. However, the Council of Scientific and Industrial Research (CSIR), utilizing India's Traditional Knowledge Digital Library (TKDL), provided evidence from ancient Ayurveda and Unani texts, such as *Cakradattah* and *Bhaisajya Ratnabali*, showing that these plants had long been used in Indian medicine for treating influenza and epidemic fevers. India prevented a Danish company, Claras Aps, from acquiring a patent on its invention of the fat burning properties of ginger, jeera (cumin), onion and turmeric. Claras Aps had filed a patent application at the European Patent Office saying its invention of ginger, jeera (cumin), onion and turmeric as slimming agents was novel. Like the earlier case, even in this case the Council of Scientific and Industrial Research (CSIR), with the help of India's TKDL, dug out formulations from ancient Ayurveda texts like 'Astanga Samgraha', 'Yogaratanakarah', 'Yogatarangini' and 'Gandanigraha' dating back to the 5th century, which contained evidences regarding their use for ages in India, as fat burners. Director of TKDL, Dr. V. K. Gupta submitted a letter to the European Patent Office stating that all the four have long been known in Indian systems of traditional medicine for their use as slimming agents or fat burning agents and these references were made from the TKDL regarding these uses. The novelty of the invention was challenged and subsequently the Danish company was forced to withdraw its patent claims.

TRIPS Issues:

The TRIPS Agreement on the other hand, established minimum international standards of the protection and enforcement of intellectual property rights. It is the first international treaty that makes it possible to patent life forms, by establishing that governments can exclude plants and animals from patentability, but not microorganisms or non-biological and microbiological processes. Moreover, plant varieties must be protected under some kind of intellectual property right; either patents or a sui generis

system. Given that developing countries only agreed to these conditions as a compromise during the TRIPS negotiations, it was established that these provisions would be subject to review, among other things, to ensure that the TRIPS Agreement and the CBD are supportive of each other.

Nagoya protocol:

The Nagoya Protocol on access and benefit sharing is a landmark in the international governance of biodiversity. The Convention on Biological Diversity (CBD) had already established the fair and equitable sharing of benefits as one of its main objectives, and also outlined basic principles such as prior informed consent and mutually agreed terms. Yet these principles remained largely unimplemented, with a range of difficulties and different views on ways of overcoming them. With the Nagoya Protocol, the fair and equitable sharing of benefits has been reaffirmed as a fundamental component of biodiversity strategies. In addition, a set of rules has been agreed upon to facilitate, promote and ensure its effective implementation.

CONCLUSIONS

Biopiracy presents significant financial incentives, as corporations can secure exclusive rights to biological resources and traditional knowledge, leading to substantial profits. Given this, preventing biopiracy, driven by immense wealth potential, is challenging and requires systemic, long-term efforts. To combat biopiracy, governments should prioritize initiatives to identify commercially valuable biological resources and traditional knowledge, especially those utilized by Indian communities for centuries. This effort should involve comprehensive state-wise surveys conducted by committees that include members from village panchayats and grassroots organizations, who possess deep knowledge of these resources and their traditional uses. Few measures which should be adopted by the government which includes organizing awareness generation camps in the villages with the help of NGOs, active in that region (such NGOs must be provided all possible support by the government at the administrative and financial end); organizing frequent seminars and public lectures, by intellectuals in the field, at various colleges and institutes to spread awareness among the student community; raising the issue in talk shows (in the TV channels) and exploiting the other mediums of electronic and print media to generate awareness, among the masses, mainstreaming the issues like conservation of biodiversity and community rights.

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