Protection of Bio-Diversity and Intellectual Property Rights

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***Abstract*: The intellectual property rights (IPR) and biodiversity are the two distinct terms and hence their historical development is complex. In general, IPR is the legal means to protect and promote the development of innovations, including new plant varieties and life forms. In the recent times, the expansion of IPR in the field of biotechnology has also raised concerns about the potential impacts on biodiversity, as patents and other forms of IPR can limit access to genetic resources and restrict their use in future research and development. In view of globalization India is witnessing significant development of Intellectual Property Rights (IPRs) in the area of Bio-diversity and Biotechnology.**

***Keywords*: IPR, Biodiversity, Biotechnology, Globalization. development of innovation.**

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History of Intellectual Property Rights and Biodiversity

The intellectual property rights (IPR) and biodiversity are the two distinct terms and hence their historical development is complex. In general, IPR is the legal means to protect and promote the development of innovations, including new plant varieties and life forms. In the recent times, the expansion of IPR in the field of biotechnology has also raised concerns about the potential impacts on biodiversity, as patents and other forms of IPR can limit access to genetic resources and restrict their use in future research and development.

Further the context of development, one of the key international agreements in this area is the Convention on Biological Diversity (CBD), which was held in Rio de Janeiro, Brazil in 1992, but came into force in 1993. The CBD recognizes the importance of biodiversity and the need to conserve and sustainably use it, while also acknowledging the importance of IPR in promoting innovation. The CBD includes provisions that encourage the sharing of benefits arising from the use of genetic resources and traditional knowledge, and calls for the development of national and international measures to ensure that the conservation and sustainable use of biodiversity are not compromised by IPR.

In view of globalization India is witnessing significant development of Intellectual Property Rights (IPRs) in the area of Bio-diversity and Biotechnology. The CBD defines Bi-diversity as "Variability among living organisms from all sources including interalia terrestrial, marine and other aquatic eco-system and ecological complexities of which they are part, this includes diversity within the species between species and ecosystems"[1]. India has enacted the Biological Diversity Act[2] providing for conservation of biological diversity and sustainable use of its components and fair and equitable sharing of benefits.

India is rich in Bio-diversity and it is one of the 12 mega diversity of the sites in the world prior to the advent of Biotechnologies and Genetic Engineering. The economy of a nation is measured in terms of its gold reserves and now it is measured in terms of biodiversity reserves. Some ecologists and economists had estimated recently the monetary value of the nature's services through biodiversity is around $ 30 trillion a year.

Hence Bio-diversity is becoming very prominent now a days and a boon to the technologically advanced nations for extracting the renewable resource and enriches their economy unimaginably. This indispensable resource is by and large confined to a greater part to the tropics and India also is a tropical country. Tropical forests cover 7 % of earth surface, which harbors 60 to 80 % of the global diversity.

India being one of the mega biodiversity countries possess around 45,000 listed plant species and 80,000 animal species on its total area of 2 % on the earth surface. The uniqueness of our country's biodiversity lies in its endemism as 30 % of plant species and 60 % of animal species are endemics. This natural disparity in Bio-diversity wealth forced the technologically rich but biodiversity poor industrialized nations to depend on biodiversity rich but technologically poor developing nations as an inevitable compromise in sharing their interest and the developed nations are exploiting the resources of the developing nations.

The Biological Diversity Act defined benefit claimers as "the conservers of biological resources their by-products, creators and holders of knowledge and information relating to the use of such biological resources and innovations"[3].

The CBD imposed an obligation on member countries to respect, preserve and maintain knowledge innovation and practices of indigenous and local communities embodying traditional life styles relevant for the conservation and it provides further that the members must make sustainable use of biological diversity and promote their wider application with approval and improvement of the holders of such knowledge apart from encouraging the equitable sharing of the benefits arising from the utilization of such knowledge, innovation and practices[4].

Bio-Diversity and Traditional Knowledge (TK) :

T.K. is closely related to biodiversity and genetic resources. Diversity of biological organisms are component in the livelihood of poor people of the developing countries. They depend on diversified plants and animals to meet the nutritional and energy needs. Suresh and Puram Chand call for codification of Traditional knowledge and biodiversity[5].

Traditional Knowledge, Water, and Biodiversity

Simple local technology and an ethic that exhorts "capture rain where it rains" have given rise to 1.5 million traditional village tanks, ponds and earthen embankments that harvest substantial rainwater in 660,000 villages in India and encourage growth of vegetation in commons and agro ecosystems. If India were to simply build these tanks today it would take at least US $ 125 billion. Humans have virtually appropriated fresh water. Humanity now uses 26 percent of total terrestrial evapotranspiration and 54 percent of runoff that is geographically and temporally accessible. New dam construction could increase accessible runoff by about 10 percent over the next 30 years, whereas population is projected to increase by more than 45 percent during that period (Postel et al., 1996). Over thousands of years societies have developed a diversity of local water harvesting and management regimes that still continue to survive, for example, in South Asia, Africa, and other parts of the world (Agarwal and Narain, 1997). Such systems are often integrated with agro forestry (Wagachchi and Wiersum, 1997) and ethno forestry practices (Pandey, 1998). Recently it has been suggested that market mechanisms for sustainable water management such as taxing users to pay commensurate costs of supply and distribution and of integrated watershed management and charging polluters for effluent treatment can solve the problem. Such measures are essential although, but they are insufficient and would need to draw on the local knowledge on rainwater harvesting across different cultures. Rainwater harvesting in South Asia is different from other parts of the world in that it has a continued history of practice for at least over 5000 years. Similarly, Balinese water temple networks as complex adaptive systems are also very useful systems. Although hydraulic earthworks are known to have occurred in ancient landscapes in many regions, they are no longer operational systems among the masses in the same proportion as in South Asia.. A comparison of the volume of stones in the mounds to the volume of surface stones from the surrounding areas indicates that the ancient farmers removed only stones that had rested on the soil surface and left the embedded stones untouched. According to results of simulated rainfall

experiments, this selective removal increased the volume of runoff generated over one square meter by almost 250% for small rainfall events compared to natural untreated soil surfaces (Lavee et al., 1997). One of the principle tree genuses growing in association with tanks and ponds in India is Ficus which is culturally valued throughout the country. It is a keystone genus and supports a variety of other species. Records of frugivory from over 75 countries for 260 Ficus species (approximately 30% of described species) suggest that in addition to a small number of reptiles and fishes, 1274 bird and mammal species in 523 genera and 92 families are know Incorporating Traditional Knowledge in Practice Any attempt, endeavouring to integrate traditional knowledge for biodiversity conservation and sustainability of natural resources should be based on the principle that traditional knowledge often cannot be dissociated from its cultural and institutional setting.

Control of Intellectual Property Rights Regime:

The developed nations and the Multi-National Corporations (MNCs) promoted by them want to control theses resources for commercial purposes by taking advantage of IPRs. Protection of biodiversity is an inevitable task before developing nations in larger interest of mankind. The principle of sustainable development should apply to safeguard biodiversity and should not yield to IPRS regime. This is essential for balancing the conflicting interests of million of poor people in developing countries depending on biodiversity for their livelihood and survival of future generation. The developing countries have to fight collectively for protection of their wealth, public health and public interest.

Thus, a consensus must grow that dominant IPRs model should not be worked out as the WTO and TRIPS agreement have become more controversial with serious issues and challenges directly in conflict with the interests of people of the third world countries which are suffering from vulnerable and deplorable conditions of poverty, ignorance, poor governance and weak legal system to effectively resist the new IPRs regime.

Relationship between Biodiversity and Intellectual Property Rights

In the current IPR framework, commercialization of seed production, monoculture, and the protection of novel plant varieties, microbes, and genetically modified organisms are the main areas of focus. Rich biodiversity is consequently continuously disappearing. In order to achieve parity between formal intellectual property systems and the sustainable elements of biodiversity, it is imperative to put in place a substitute mechanism. Developed countries have better research and development facilities despite not having abundant genetic resources. They study biogenetic materials, the majority of which are sourced from underdeveloped countries. Because of this, biogenetic data is being transferred to industrialised countries in an unsecured manner. On the other hand, genetic data is being transferred to the Global South through patents and plant breeder's rights in a protected manner. This behavior has both overt and covert impacts.

Biodiversity and Intellectual Property Rights: Their Effects

Despite the fact that trustworthy data and information about the social and economic effects and significance of IPR in developing countries have been developed, little is known about how IPR affect biodiversity conservation and sustainable usage. The direct and indirect misappropriation of biological and genetic resources as well as traditional knowledge, or what has been referred to as "biopiracy," has been one verified impact of IPRs on the principle of countries' sovereign rights over their genetic resources and, to some extent, on sustainable use.

However, over period in time, there have been efforts to reconcile the potential conflicts between IPR and biodiversity, including through the negotiation of international agreements, such as the Nagoya Protocol on Access and Benefit-Sharing, and the development of national policies and guidelines. Despite these efforts and subsequent agreements, the relationship between IPR and biodiversity continues to be a complex and evolving issue. The challenge of balancing the protection of innovation and the conservation of biodiversity remains an important aspect.

Regarding the cultural and institutional the following suggestions may be useful:

1. Each programme aiming at the promotion of traditional knowledge should be based on the recognition that natural resource rights and tenurial security of local communities forms the fundamental basis of respecting traditional knowledge.

2. More attention is needed on protection of intellectual property rights of traditional people.

3. Innovative projects may need to be developed that aim at the enhancement of the capacity of local communities to use, express and develop their traditional knowledge on the basis of their own cultural and institutional norms. There is an urgent need for the integration of Traditional and formal sciences.

Following considerations may be useful in this regard:

1. Development of methods for mutual learning between local people and the formal scientists.

2. State forest policies and sustainable forest management processes need to give full attention to the forestry and local institutional arrangements to incorporate traditional knowledge in forest management and development projects.

3. Traditional knowledge and traditions can contribute to the preparation of village micro-plans, which are prepared for eco-development, joint forest management and rural development. The plans should be based on both geographic and traditional community boundaries rather than only on administrative boundaries.

4. Revival of the traditional water management systems that have served the society for hundreds of years but are currently threatened.

5. There is a clear need to integrate traditional and formal sciences for participatory monitoring, and taking feedback to achieve adaptive strategies for management of natural resources. In spite of the value of traditional knowledge for biodiversity conservation and natural resource management there still is a need to further the cause.

The following consideration may be useful in this respect:

1. Encouraging the documentation of indigenous knowledge and its use in natural resource management. Such documentation should be carried out in participation with the communities that hold the knowledge. Due attention should be given to document the emic perspectives regarding IK rather than only the perspectives of professional outsiders. The documentation should not only consist of descriptions of knowledge systems and its use, but also information on the threats to its survival. People's biodiversity registers are a case in point (Gadgil 1994 & 1996. The program of People's Biodiversity Registers promotes folk ecological knowledge and wisdom by devising a formal means for their maintenance, and by creating new contexts for their continued practice. PBRs document traditional ecological knowledge and practices on use of natural resources, with the help of local educational institutions, teachers, students and NGOs working in collaboration with local, institutions. Such a process and the resulting documents, could serve a significant role in "promoting more sustainable, flexible, participatory systems of management and in ensuring a better flow of benefits from economic use of the living resources to the local communities"

2. Facilitating the translation of available and new documents describing Indic traditions such as ancient texts on medicinal plants, into local languages and dissemination of these documents amongst local people. Such a translation is indeed required because texts are often available in languages (e.g. Sanskrit) not understood by many in contemporary India. On the other hand, translation of local knowledge into formal scientific terminology will provide space to external researchers, policy makers, and practitioners to comprehend and support people's knowledge systems and initiatives.

3. Facilitating the exchange of information amongst practitioners of local knowledge.

4. Developing clear and concise educational material on traditional knowledge systems to be used in communication programmes to impart information regarding the merits and threats to indigenous knowledge systems to both policy makers and the general public. Scientific institutions have an important role to play in supporting the knowledge systems. As has been pointed out earlier, it is now recognised that a dichotomy between local and formal systems of knowledge is not real, and that any knowledge is based on a set of basic values and beliefs and paradigms. Therefore, there is a definite need to further develop systematic insight into the nature and scope of traditional knowledge.

The following activities may be useful in this regard:

1. Developing curricula and methods for providing formal training and education in traditional knowledge systems to agencies, researchers and practitioners who work in collaboration with communities. In this context, the Indian Himalayan Region, which represents a unique biogeographic entity, new initiatives by G.B. Pant Institute of Himalayan Environment and Development have yielded positive results

2. Developing research projects aimed at assessing the possibilities and constraints of using traditional knowledge under specific conditions. Such research projects should move beyond the first generation research projects, which aimed at demonstrating the value of local knowledge systems by focusing on successful cases of application. Second generation research projects shall focus on comparing application of knowledge systems across a range of circumstances and across disciplines to craft the traditional sustainability science.

3. Developing new methods for incorporating local knowledge systems in natural resource management regimes through action research.

Conclusion

The obvious legal gap in the international systems for protecting common resources may therefore be presents everywhere. Furthermore, the possessions substantially contradict the cognitive content of the indigenous people. However, the use of old resources is frequently restricted due to intellectual property rules. The approved laws should include adequate penalties and compensation amounts to deter resource exploitation. In regulating property rights and taking into account the value of historical materials, there should be increased coordination among international frameworks.

To do this, we require regulations that support the transfer of technology and inclusive, active engagement in R&D. Dynamic cooperation entails underprivileged rural and farm communities exercising control over genetic resources, and this is reciprocated by the formal system undergoing periodic experimentation and changes to institutional and policy frameworks in order to uphold the global commitment to biodiversity preservation. Furthermore, by designating a group of people the status of a geographical indicator, one protects the rights of the people and avoids further exploitation.

References:

1. Article 2 of the Convention on Biological Diversity Act 1992
2. Biological Diversity Act, 2002
3. Section 2 (a) of the Biological Diversity Act 2002
4. Article 8 of the Convention on Biological Diversity Act, 1992
5. Suresh A and Puram Chand, “TRIPS an Evaluation” Kurukshetra, April 2004 at p.25.