



Original Article

Biological Diversity: Who Owns

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Abstract

In recent years an increasing number of state-based protection schemes have asserted ownership over biodiversity goods and services through various forms of cultural documentation such as registry, archives, databases, texts and inventories. Natural resources are no way bounded by political boundary imposed by different nations. No man can hold the ownership on any plant or animal. Biological diversity doesn't follow strict political boundaries of nations and doesn't obey the artificial rules imposed on them based geographical limitations by man. This review clearly elucidates the how biological diversity is used and claimed by various groups of parties. It also encompasses the complex nature of biological diversity and its ownership claims.

Keywords: *Biological Diversity, Benefit sharing, ownership, CBD*

INTRODUCTION

Biological diversity is a fanciful term which attracts many wide varieties of people ranging from politicians to biologists as well as economists to policy makers. The term *biodiversity* encompasses a broad spectrum of biotic scales, from genetic variation within species to biome distribution on the planet (Wilson 1992, Gaston 1996, Purvis and Hector 2000, Mooney 2002; Hooper *et al.*, 2005). The term biological diversity was used first by wildlife scientist and conservationist Raymond F. Dasmann in the 1968 advocating conservation (Dasmann, 1968). India is one among the 12 mega diverse countries of the world. Indian subcontinent is covered by tropical rain forest in the Andaman Islands, Western Ghats and coniferous forest in the northeastern India of the Himalayan region. These extreme forest types sandwiched sal-dominated moist deciduous forests of eastern India, teak-dominated dry deciduous forests of central and southern India and the babul-dominated thorn forests of the central Deccan and western Gangetic plain (Tritsch, 2001). India is a home for many endemic plant and vertebrate species. Among plants, species endemism is estimated at 33% with c. 140 endemic genera but no endemic families (Botanical Survey of India, 1983). Areas rich in endemism are north-east India, the Western Ghats and the north-western and eastern Himalayas. A

small pocket of local endemism also occurs in the Eastern Ghats (MacKinnon and MacKinnon, 1986). The Gangetic plains are generally poor in endemics, while the Andaman and Nicobar Islands contribute at least 220 species to the endemic flora of India (Botanical Survey of India, 1983).

India is a Party to the Convention on Biological Diversity (1992). Convention on Biological Diversity' (CBD, 1992) main objectives are conserve, sustainable use and equitable sharing of Biological Diversity. Based on the article 3 and 15, states have their ownership over their Biological Diversity and they can exploit their own resources in accordance with the international law and to their own environmental policies. Here comes the major problem of exploitation of natural wealth of any state. The fundamental drawback of the convention is that it shifted its focus from biological, ecological and scientific value of biodiversity into its economic value. Article 15 of the CBD clearly recognizes that the access to genetic resources rests with the national governments and is subject to national legislation.

Food crops of India

Rice is India's staple food of the people of eastern and southern parts of the country. According to

Dr. Richharia, a well known rice scientist estimated that, even today 200,000 varieties of rice exist in India - a truly Phenomenal number (Vijayalakshmi and Balasubramanian, 2004). There is always a debate on the origin of rice and early domestication. Recently, scientists shed a new light on the origin of rice domestication goes back to ~8200-13,500 yrs ago in China (Vaughan *et al.*, 2008; Molina *et al.*, 2011). Wheat is the second major food crop in India and mainly cultivated in the Rabi season. Wheat originated mainly from the southeastern Asia (Feldman, 2001; Shewry, 2009).

Exchange of plant genetic resources between developing (gene-rich) and developed (gene-poor) countries described well by Fowler and Mooney (1990), Kloppenburg, (1988) and Gepts (2004). Kloppenburg (1988) and Palacios (1998) have shown, in the best case, a dependency of only 30% for the Southwest Asian center of agricultural origin (i.e. only 30% of crop production in that area relies on non-indigenous crops). In other cases, they estimated about 60% of dependency in the Latin American and Chinese centers (Figure 1) (Gepts, 2004).



Fig 1. Dependency of crop production in major centers of agricultural origins or other geographic regions on introduced crops (map based on data of Kloppenburg, 1988; Adopted from Gepts, 2004). Values indicate percentage dependency.

Rights over Biodiversity by the State

Future economic success of biodiversity-rich developing nations are purely dependent on the raw material available for biotechnology and pharmaceutical industries. Biodiversity has been visualized as the most commercially important natural resource like oil or gold. Principle 1 of the Declaration on Environment and Development adopted at United Nations Conference on Environment and Development (UNCED) (Rio Declaration) provides: "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature" whereas principle 2 states that states have their own sovereign right to exploit their own resources but this do not cause any damage to the environment of other states or of areas beyond the limits of national jurisdiction (United Nations, 1992). It clearly states that states have their own rights over the biodiversity exist within their geographical area.

Article 4 of CBD (1992) recognizes the national governments as default owner of biodiversity's goods and services and exercise of formal property rights. The demand of the developing countries in CBD in 1992 for sovereign rights over genetic resources and equitable sharing of commercial benefits was based on little scientific input. It has been pointed out that the scientific board of the CBD is dominated by politicians and professional negotiators hindering effective action on the basis of scientific evidence and it was suggested to improve the scientific input for the benefit of conserving biodiversity (Laikre *et al* 2008). The scientific inputs will definitely break the geographical barriers as biodiversity and its benefits will not concealed in very narrow range geographical boundaries. In the developing countries, there is a gap between its population and demand as well as production of food. This draws more open access and free exchange of genetic resources but it complicated by arriving

role of ownership and benefit sharing mechanism emerged in Rio conference.

The ownership of biodiversity by multi-national companies (MNCs) has been worsening the benefit sharing. The current system does not allow companies share the benefit arises out of any biological diversity found in any region especially bio-rich developing countries. Indian government is trying to come up an agreement with MNCs which share the profits from products that are based on plants and animals belonging to the soil but countries like United States are against such mandatory profit sharing provisions, as they will dilute the profits of big international companies (Eluvangal, 2010). Even to conduct clinical research, MNCs need to get prior approval from the National Biodiversity Authority (NBA) if its falls under commercial purpose (Bhatt, 2012).

Industries make investments in research and development to get higher profits only. Pharmaceutical, biotechnological and agricultural industries undertake expensive research and development efforts to create technologies that allow the effective utilization of natural species' genes and to market the improved products that result. Intellectual Property Rights (IPRs) are being claimed on plant species long used by Africans, pain killers used by Chinese, Andean crop species, and traditional rice varieties nurtured by Indian farmers (Ogolla *et al.*, 2006).

Benefit Sharing

CBD (1992) article 1 clearly spells out that the third and final objective of the convention is that the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. Several nations also implemented these objectives of CBD with laws. India's Biological Diversity Act ("Diversity Act") (2002) is also designed to turn the spirit of the CBD with the above three objectives. This Act, according to Section 21 and Rule 20 of the Biodiversity Rules, (<http://nbaindia.org/content/17/20//rules.html>) insists upon including appropriate benefit sharing provisions in the access agreement and mutually agreed terms related to access and transfer of biological resources or knowledge occurring in or obtained from India for commercial use, bio-survey, bio-utilization or any other monetary purposes.

The diversity Act also imposes certain restrictions on request related to access to biological resources and traditional knowledge if the request is on: (i) endangered taxa (ii) endemic and rare taxa (iii) likely adverse effects on the livelihood of the local people (iv) adverse and irrecoverable

environmental impact (v) cause genetic erosion or affect ecosystem function (vi) purpose contrary to national interests and other related international agreements to which India is party (Rule 16, Sub rule 1)

(<http://nbaindia.org/content/17/20//rules.html>).

The benefit sharing with reference to genetic resources is an important issue in the CBD. Nagoya Protocol (Anonymous, 2011) addresses appropriate access to genetic resources and transfer of relevant technologies. This protocol was adopted under the auspices of CBD. The Nagoya Protocol also leaves a number of questions unresolved and answers others only in part. In India, it was the Tropical Botanic Garden and Research Institute (TBGRI) in Kerala that demonstrated indigenous knowledge system merits support, recognition and fair and adequate compensation. TBGRI benefit sharing model got wider acclaims which was implemented the article 8 (j) of CBD, in letter and spirit. Such models need to be emulated in similar situation in India and elsewhere in the world (Pushpangadan, 2002). But it still questioned as the model moved the common heritage of humanity to private parties and now manufacturing license expired on august 2006 is not yet been renewed by Kani panchayat leaders (Reddy, 2006).

Conclusion

The ownership of biodiversity goods and services is more complex than individual's limited knowledge. Formal ownership has evolved in the last two decades. Recently adopted Nagoya Protocol helps in facilitating the benefit sharing mechanism. But still the benefit-sharing can neither be a substitute for innovation nor a sustainable source of income for rural communities who are real custodian for the traditional knowledge and intelligences. The biodiversity ownership issue is an unresolved and quite complex. Still now there is no answer how to reward not only inventors (recipients of biodiversity) but native farmers and indigenous people (donors of biodiversity).

We are at the crossroad. The debate is between science and policy/law. Our understanding of biological diversity and the associated genetic resources is rooted in science, but the ownership and management of these resources lies in the arena of international dialog and policy stemming from law. We still don't understand that we borrowed this planet from our future generation rather than inherited from our parents. In reality everyone is owner of the biodiversity and also no

one is owner of the biodiversity. The thing is which side one wants to stand only matters.

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