



# EFFECTS AND VALUES OF BIODIVERSITY IN INDIA

**Vikas Kumar Soni**

*Department of Geography, Govt. P.G. College, Sheopur, Madhya Pradesh, India*

## ABSTRACT:

Biodiversity is life on planet and it is important for undermining the stability of the earth. India is one in every of the world's most biologically and culturally numerous countries. It's graded ninth within the world in terms of higher plant species richness. At the scheme level, India is additionally well-endowed, with 10 distinct bio geographic zones. It conjointly contains 2 of the world's 25 diversity hotspots, attributable to their very high levels of species-richness and endemism, and vulnerable standing. India has tremendous diversity, genetic furthermore as of species and ecosystems. It contains over seven percent of the world's diversity on a pair of 2.5 percent of the Earth's surface. This diversity can be found in vast variety of landforms and climates that is shown in habitats ranging from tropical to temperate, and from alpine to desert. India's faunal wealth is equally diverse. The total number of animal species is estimated at 91,307, representing about 7.46 per cent of the world's fauna. India's known animal diversity includes about 8,61,696 insects, 21,723 fish, 240 amphibians, 460 reptiles, 1,232 birds and 397 mammals.

**Keywords:** - *Biodiversity, Ecosystem, Sustainable development, Endemism.*

## I. INTRODUCTION:

India is also considered as one of the world's eight centers of origin of cultivated plants. India has 51 species of cereals and millets, 104 species of fruits, 27 species of spices and condiments, 55 species of vegetables and pulses, 24 species of fibre crops, 12 species of soil seeds, and various wild strains of tea, coffee, tobacco and sugarcane. Several hundred species of wild crop relatives are also distributed all over the country, especially in the western and eastern Himalayas, the Western Ghats and the Malabar Coast, north-eastern India, the Gangetic plain, and in the eastern part of the Deccan Plateau which is a major center for wild rice, Citrus Indica, the most primitive species of citrus plants, is found in the Tura hills in Meghalaya.[1] It is believed that the cultivated varieties of Citrus in India were perhaps developed from this endangered species. India's faunal wealth is equally diverse. The total number of animal species is estimated at 91,307, representing about 7.46 per cent of the world's fauna. India's known animal diversity includes about 8, 61,696 insects, 21,723 fish, 240 amphibians, 460 reptiles, 1,232 birds and 397 mammals. In also includes about 86,413 invertebrates. The ancient practice of domesticating animals has resulted in India's diverse livestock, poultry and other animal breeds. India has 26 breeds of cattle, 40 breeds of sheep, 20 breeds of goats, 8 breeds of camels, 6 breeds of horses, 2 breeds of donkeys and 18 breeds' poultry birds. India also contains vast microbial diversity.

## I. BIODIVERSITY AND ECONOMY:

The Convention on Biological Diversity (CBD) which entered into force in December, 1993, is an international agreement among the nations of the world to arrest and reverse this situation for the welfare and survival of the planet and its denizens, as well as for intergenerational equity. The Convention has three objectives, namely, conservation of biodiversity, sustainable use of the components of biodiversity, and fair and equitable sharing of benefits arising out of the use of genetic resources. The Convention of Biodiversity (CBD) defines biodiversity as “the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part. This includes diversity within species, between species, and of ecosystems”(MoEF, 2014). Biodiversity is the natural capital and ecological infrastructure foundation on which economic growth, social development and human wellbeing is cultivated.[2]

Many economic sectors are directly concerned with biodiversity and ecosystems services, including agriculture, fisheries, forestry, development, health, energy, transport and industry. Several depend on natural capital for their flow of inputs, research, new products and business innovation. An obvious example is the pharmaceutical industry: 25-50% of the sector’s turnover (about US\$ 650 billion/year) is derived from genetic resources. Ecotourism is another fast-growing sector which generates significant employment and is now worth around US\$ 100 billion/year.[3] Biomimicry (learning from nature) is expanding in areas such as architecture, engineering and product development. With appropriate investment, it offers major potential for new markets. Biodiversity is integral to economic growth and poverty reduction (UNEP, 2010). According to a report about 40 percent of the world’s economy is contingent on biodiversity. More than 80 percent of the world’s poor directly or indirectly rely on biodiversity for their survival (Hirsch and Secretariat of the Convention on Biological Diversity, 2010).

Therefore, the impoverished are most adversely impacted by biodiversity destruction. Overexploitation of biological resources makes it harder for locals to have access to resources because they become scarcer, making these resources more expensive (Duraiappah, 1998). Biodiversity provides many economic benefits and environmental services, essential for growth, to the local people. But in the absence of knowledge of true economic value of these services, natural resources are often overexploited, leaving the poor local communities vulnerable (Rands et al., 2010). So that the Policy makers have a common interest in maintaining this natural capital to avoid significant financial costs. It is important to realise that biodiversity not only increases agricultural productivity and ecosystem protection but also provides many environmental services. [4]

## I. BIODIVERSITY IN INDIA:

India occupies 2.4% of the world’s area and is host to 7% of the global biodiversity, accounting for 8% of the world’s mammals, 13% birds, 6% reptiles, 4% amphibians, 12% fish and 6% flowering plants (see Table 1). It is one of the 12 mega biodiversity hotspots of the world, the other countries being Bolivia, Brazil, China, Colombia, Ecuador, Indonesia, Mexico, Peru, South Africa, USA and Venezuela. So far, over 91,200 species of animals and 45,500 species of plants have been documented in the ten bio geographic regions of the country. India also has a variety of wetland ecosystems ranging from high altitude cold deserts to hot and humid areas in coastal zones containing diverse flora and fauna (MoEF, 2014). However, India is losing biodiversity at a rapid rate. Around 39 species of mammals, 72 species of birds and 1336 species of plants are considered vulnerable and endangered, as these species have not been sighted during last 6–10 decades (Haripriya et al., 2006).

Additionally, about 4,445 km<sup>2</sup> of the country is under mangroves (MoEF, 2009). India also possesses rich marine diversity. It is third largest fish producing country in the world (MoEF, 2009). The vast coastline of India stretches 7,517 km in total and comprises of a wide range of habitats (like estuaries, lagoons, mangroves, backwaters, salt marshes, rocky coasts, stretches and coral reefs). They are all characterised by rich and unique biodiversity components. Forests, covering 23.39 per cent of the geographical area of the country (of which 75 per cent occurs in the north-eastern states), are crucial ecosystems for India.

Due to lack of awareness for the value of biodiversity and inadequate forest protection planning, this rich biodiversity is in continuous decline. As per the International Union for Conservation of Nature (IUCN) Red List version 2010.4, 94 species of mammals, 78 species of birds, 66 species of amphibians, 30 species of reptiles, 122 species of fish, 113 species of invertebrates and 255 species of plants in India are listed as 'Critically Endangered', 'Endangered' or 'Vulnerable.'

## **BIODIVERSITY CONSERVATION POLICIES IN INDIA:**

India became a Party to the Convention of Biological Diversity (CBD) in 1993, and prepared its first National Biodiversity Action Plan (NBAP) entitled "National Policy and Macro Level Action Strategy on Biodiversity" in 1999, (referred to as Strategy, 1999 hereafter) to give effect to its commitments under the CBD. The Strategy, 1999 was prepared after extensive consultations with stakeholders at all levels. The consultative process generated nationwide awareness about the CBD and created aspirations for its effective implementation. Enactment of Biological Diversity Act, 2002 (referred to as BD Act), followed this exercise to create the required legislative support base for the implementation of the Convention. Section 36(3) of the Act obligates the Central Government to "as far as practicable wherever it deems appropriate, integrate the conservation, promotion and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

The Strategy, 1999 and the BD Act recognized and articulated the need to integrate biodiversity in sectoral and cross-sectoral programmes. It was therefore required that the cohesiveness between Strategy, 1999 and the sectoral policies, namely, the National Forest Policy (NFP), 1988, the National Conservation Strategy and Policy Statement on Environment and Development, 1992, the Policy Statement on Abatement of Pollution, 1992, the National Agricultural Policy (NAP), 2000, National Population Policy (NPP), 2000, and National Water Policy (NWP), 2002 was established. A similar demand of cohesiveness was created by the need to meet the other national and international commitments on the issues of environment including climate change and desertification. Taking note of all these, the Government brought out a comprehensive National Environment Policy (NEP) in 2006 which did not abrogate sector (BMC) to protect local communities' knowledge on biodiversity and conserve and develop areas of biodiversity. These bodies were responsible for implementing the Biodiversity Act of 2002 that aimed to sustain ecosystems and provide information on biodiversity. Government officials, NGOs and academicians, who conducted thorough research enacted these decentralised provisions. After the Biodiversity act of 2002, the National Environmental Policy (NEP) of 2006 was enacted to create legislation for general environmental concerns. The NEP was created to fill in gaps and build on already existing environmental knowledge and legislation. This would allow India to improve sustainability and conservation of all aspects of the environment.

## **FUNCTIONING OF BIODIVERSITY BOARD:**

National Biodiversity Authority (NBA), the national level authority, works with both the State Biodiversity Boards (SBB's) at the provincial level and Biodiversity Management Committees (BMC's) at the local level to implement biodiversity strategies and conservation practices. The NBA is a statutory and autonomous body that performs facilitative, regulatory and advisory functions for the Government of India. It focuses on issues of conservation and sustainable use of biological resources and fair and equitable sharing of these biological

resource benefits. NBA is in charge of maintaining the Indian Biodiversity Information System (IBIS) and giving approval to individuals and entities that want to use biological resources or biodiversity knowledge.

Local populations in urban and rural areas set up BMCs as autonomous bodies. They are responsible for the promotion of conservation, sustainable use and documentation of biological diversity (including preservation of habitats), conservation of land races, folk varieties and cultivars, domesticated stocks and breeds of animals and micro-organisms and documentation of knowledge relating to biological diversity. Since BMCs are at the ground level, they do most of the work and report to the NBA via their respective SBBs.

BMCs consist of a Chairperson and six appointed officials of which one-third are women. The six members of the council appoint the Chairperson for the Panchayat or Municipality. BMCs, in consultation with the local villagers are responsible for creating and updating People's Biodiversity Register (PBRs), a database comprised of information on availability and knowledge of local biological resources, medical knowledge of resources etc.). The database is maintained and validated by the BMC's and prepared through consultative processes with research universities, surveys, governmental departments, NGOs, academicians and panchayats. The PBRs are accessible to the general public but foreign entities and NRIs need approval from the NBA to access its knowledge.

BMCs are aided by researchers, scientists, and students to document information. Thereafter, the information is compiled in an electronic database, IBIS. This information is created to manage natural resources in a decentralised system and create a means of equitable benefit sharing for commercial uses. However, because most information lies in oral, written and folk tales, it is not documented. BMC's collect money for their funds by levying fees from foreigners who wish to access their database and by some funding provided by the SBBs and NBA. All three levels are ultimately under the jurisdiction and funding of the Ministry of Environment, Forest, and Climate Change (MoEFCC). The funds are managed primarily by the SBBs and used for the conservation of biodiversity and the betterment of the community. The Management Committees also prepare an annual financial report, which is audited in consultation with the Accountant General of the State. Grants and loans are issued from the NBA and SBB as well. Funds are kept in a bank and accessible to the local authority (Bhattacharya and Tangri, 2017).

## V. POLICIES FOR LEGISLATION:

**1. Agricultural Policies:** - The National Agricultural Policy (NAP) was created in 2000, initiated by the Indian Ministry of Agriculture and made public by the NDA Government. However, it is no longer existent. The National Policy for Farmers (NPF) of 2007 is independent of the NAP but places a lot of importance on biodiversity and was initiated by the Ministry of Agriculture as well. India has a long history with implementing and revising fishery policies, starting with the Deep Sea Fishing Policy that was created due to fishermen concerns and protests, in 1977. The Deep Sea Fishing policies of 1991 were instated, with the 1994 policy being enacted by the Ministry of Agriculture. This was followed by a revised version in 2002. Later, the Comprehensive Marine Fishery Policy was created in 2004, but it is not a replacement for the deep fishing policies.

**2. National Land Use Policies:** - In India, there are three Ministries responsible for the conservation and management of land resources: The Ministry of Rural Development, the Ministry of Agriculture, and the Ministry of Environment and Forests. The National Commission on Agriculture in 1976 first suggested drafting a land use policy. In 1984 The National Land Use Board drew up a draft outline for a National Land Use policy, which was adopted by the National Land Use and Conservation Board (successor to the National Land Use Board) in 1986 (Swindale 1994), neither of which is now functional. The current draft is derived from the National Land Use Policy of 1988.

**3. Water Policies:** - The National Water Policy of 2012 is a revision from the 2002 version, neither of which mentions biodiversity. The Ministry of Water Resources manages the National Water Framework Bill of 2016.

**4. Tourism Policies:** - In 1982, the Indian Government introduced National Tourism Policy, which got revised in 1997. In 2002, the New Tourism Policy was introduced. Subsequently, using the existing framework of National Tourism Policy 2002, the Ministry of Tourism drafted the New Tourism Policy 2015 and it is still being discussed.

## CONCLUSION:

Biodiversity is getting eroded at a very alarming rate. While there are myriad of reasons, human activities are the principle reason for biodiversity loss. Development, because of its lack of concern for nature and its associated importance, has led to uncertainty of a sustainable future. Clearing land for agriculture, introducing invasive alien species, constructing infrastructure without specific knowledge, and overexploiting resources have all contributed to the cause. Lately, climate change and global warming are also posing as threats to the ecosystem. This is creating a vicious cycle of environmental degradation.

The Constitution of India contains specific provisions for the protection and improvement of environmental quality. Article 48-A of the Constitution says that “the state shall endeavour to protect and improve the environment and to safeguard the forests and wild life of the country.” Article 51-A (g) says that “It shall be duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wild life and to have compassion for living creatures.” These provisions highlight the national conscience on the importance of environment protection.

## REFERENCES:

- [1] <https://www.biologydiscussion.com/india/biodiversity-india/biodiversity-in-india/70823> [2] Policy Challenges and Opportunities. Cuts International, available at [www.cuts-international.org](http://www.cuts-international.org).
- [3] Duraiappah, A. K. (1998). “Poverty and Environmental Degradation: A Review and Analysis of the Nexus.” *World Development* 26 (12): 2169-2179.
- [4] Gavali, D., and Sharma, D. (2004). Traditional knowledge and biodiversity conservation in Gujrat. *Indian Journal of Traditional Knowledge*. 3(1): 51-58.
- [5] Haripriya, G., Sanyal, S., Sinha, R. and Sukhdev, P. (2006). The Value of Biodiversity in India’s Forests, Monograph 4: Green Accounting for Indian States and Union Territories Project (GAISP).
- [6] Hirsch, T., and Secretariat of the Convention on Biological Diversity, eds. (2010). *Global Biodiversity Outlook 3*. Montreal, Quebec, Canada: Secretariat of the Convention on Biological Diversity.
- [7] Lindenmayer, D. B., Franklin, J.F. and Fischer, J. (2006). “General Management Principles and a Checklist of Strategies to Guide Forest Biodiversity Conservation”. *Biological Conservation* 131 (3): 433-45. doi:10.1016/j.biocon.
- [8] MoEF. 2009. “India’s Fourth National Report to the Convention on Biological Diversity”.
- [9] MoEF, 2014 . “India’s Fifth National Report to the Convention on Biological Diversity”.
- [10] Rands, M. R. W., Adams, W. M., Bennun, L. Butchart, S. H. M., Clements, A., Coomes, D. and Entwistle, A. (2010). “Biodiversity Conservation: Challenges Beyond 2010”. *Science* 329 (5997): 1298-1303.
- [11] Stern, D. I. (2004). “The Rise and Fall of the Environmental Kuznets Curve”. *World Development* 32 (8): 1419-39.
- [12] UNEP. (2010). “Linking Biodiversity Conservation and Poverty Alleviation: A State of Knowledge Review”. <http://www.jstor.org/stable/2709362>.