

**BIO-DIVERSITY CONSERVATION: A STUDY OF THE  
CONVENTION ON BIOLOGICAL DIVERSITY (CBD)  
AND INDIA'S RESPONSE**

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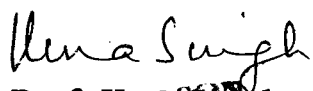
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**CERTIFICATE**

This is to certify that dissertation entitled **"BIO-DIVERSITY CONSERVATION: A STUDY OF THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD) AND INDIA'S RESPONSE,"** submitted by **Miss. Singam Rebika Devi** is her original work and has not been submitted to any other university.

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## **LIST OF ABBREVIATIONS**

<b>BCIL</b>	-	Biotech Consortium Indian Limited
<b>BNHS</b>	-	Bombay Natural History Society
<b>CBD</b>	-	Convention on Biological Diversity
<b>CGIAR</b>	-	Consultative Group on International Agricultural Research
<b>CHM</b>	-	Clearing House Mechanism
<b>CITES</b>	-	Convention on International Trade in Endangered Species
<b>COP</b>	-	Conference of Parties
<b>CRZ</b>	-	Coastal Regulation Zone
<b>EIA</b>	-	Environmental Impact Assessment
<b>FAO</b>	-	Food and Agricultural Organization
<b>GEF</b>	-	Global Environment Fund
<b>GFRA</b>	-	Global Forest Resources Assessment
<b>ICAR</b>	-	Indian Council of Agricultural Research
<b>IFF</b>	-	International Forum on Forests
<b>IPRs</b>	-	Intellectual Property Rights
<b>JFM</b>	-	Joint Forest Management
<b>MoEF</b>	-	Ministry of Environment and Forests
<b>NACB</b>	-	National Afforestation and Eco-development Board
<b>NBA</b>	-	National Bio-diversity Authority
<b>NBPGR</b>	-	National Bureau of Plant Genetic Resources
<b>NBSAP</b>	-	National Bio-diversity Strategy and Action Plan

<b>NFP</b>	-	National Forest Policy
<b>NGO</b>	-	Non-Governmental Organization
<b>NWAP</b>	-	National Wildlife Action Plan
<b>TPCG</b>	-	Technical and Policy Core Group
<b>TRIPS</b>	-	Trade Related Intellectual Property Rights
<b>U.P</b>	-	Uttar Pradesh
<b>UNCED</b>	-	United Nations Conference on Environment and Development
<b>UNEP</b>	-	United Nations Environment Programme
<b>UNESCO</b>	-	United Nations Educational Scientific and Cultural Organization
<b>WLPA</b>	-	Wild Life Protection Act
<b>ZSI</b>	-	Zoological Survey of India

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## **PREFACE**

### **I**

The conservation of the bio-diversity of the world is a basic pre-requisite for of our sustainable development. Its conservation has therefore, been made a priority area among the environmental issues. This is because the pool of biological material is shrinking and also because the importance of the biological diversity is increasing in the area of agriculture and herbal medicine. It has also enormous significance for its ecological, social, economic, cultural and ethical values. Biodiversity has potential to yield both money and food, and immense recreational value. Eco-tourism is developing fast as a profitable industry. It is, thus, necessary to strike a balance between conservation of environment, its use for tourism and rights of the local inhabitants.

While we value some species of the biological diversity which includes all life forms on the earth more than others, all life support system contribute in some way to the ecology of the earth. As a result, there is a balance among the components of the biological diversity. But over exploitation, poor conservation, large scale clearing and burning of forests, excessive harvesting of plants and animals, draining and filling of wetlands, destructive fishing practice, air pollution, and the conversion of wild lands to agricultural and urban uses result in extinction of certain plant and animal species as well as imbalance in the biological diversity.

The term bio-diversity also embraces communities of organisms, ecosystems and even entire landscape which means having more than lots of plants and animals. Today, this diversity of ecosystems, life forms and ways of life of different communities are under threat of extinction. To prevent the worldwide destruction of the biological diversity, aquatic and terrestrial movement of genetic resources from one country to another country, their economic importance and sharing of benefits, a comprehensive approach to conservation of the biodiversity is called for.

In fact for the first time, the declaration at the Stockholm Conference, in 1972, highlighted the universal basic legal principles relating to the conservation of biological diversity and subsequently in October 1982, the UN General Assembly adopted the World Charter for Nature for the conservation of the genetic variability of the earth. But, the first appropriate treaty of the international law for the conservation of biodiversity is the convention on International Trade for Endangered Species (CITES), 1973 which is applicable to all species and habitats on the planet. Since then UNEP Governing Council was requested to establish an adhoc working group of experts to discuss the matter related to biological diversity. Further negotiations between the developed and developing countries took the final shape of Convention on Biological Diversity (CBD) during the Earth Summit at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992. The Chapter (15) of Agenda 21 of UNCED is also devoted to conservation of biological diversity which aims to provide some policy guidelines to be adopted by states to implement the CBD.

The Convention on Biological Diversity is the first treaty of its kind to address in a comprehensive manner the continuous rise in plant species and animal extinction worldwide. It is also one of the most important international environmental legal instruments that strives to promote conservation of bio diversity, the sustainable use of components of biodiversity and equitable sharing of the benefits arising from the use of genetic resources.

The conservation of biological diversity and its sustainable and equitable utilization are essential not only to support the functioning of ecosystems and human economies, but also to ensure the continuing process of evolution. Species extinction is the most fundamental and irreversible manifestation of biodiversity loss. However, the more profound implication is for ecological functioning and resilience, which involves basic ecosystem processes.

Another important aspect of the Convention is that it recognizes the sovereign rights of states over the biological resources and are also responsible for conserving their biological resources and using them in a sustainable manner. However, the Convention also puts obligation to the party concerned to ensure that the activities within their jurisdiction and control do not cause damage to the environment of other states.

Under Article (23) of the CBD, a Conference of Parties (COP) has been constituted which is to be responsible for implementing the Convention. So far, six Conference of Parties have been held to discharge the responsibilities undertaken in the field of transfer of technology, funding of projects, protocol of bio-safety and a close co-operation between the CBD and the International Forum on Forests. The Conferences also reiterates that biodiversity underpins sustainable development in many ways. Poverty eradication, food security, provision of fresh water, soil conservation and human health all depend directly upon maintaining and using the world's biological diversity. Therefore, sustainable development cannot be achieved without the conservation of biological diversity. Thus, the Convention on Biological Diversity has established a wider context for all biological diversity protection as well as the sustainable use of the components of biodiversity.

## **INDIA AND CBD**

India is one of the twelve mega-diversity centers of the world due to its exceptionally rich biodiversity. India is the home land of 13,000 species of flowering plants, 20,000 species of fungi, 50,000 species of insects and about 65,000 species of fauna. It covers nearly 7 percent of world's flora and 6.5 percent of fauna of which 33 percent flora and 62 percent of fauna are endemic. They are being lost due to hunting, overexploitation, poisoning by pesticides and excessive botanical and zoological collection displacements by exotics.

India, is a party to the Convention on Biological Diversity in which Article 8 (j) and (k) states that, "each Contracting Party shall, as far as possible and as appropriate, subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional life styles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices" and "develop or maintain necessary legislation and other regulatory provisions for the protection of threatened species and populations." Keeping in view the aforementioned obligations, India adopted the India's Biological Diversity Act in 2003. Several Programmes and measures have been taken by the Government of India to counter the rapid erosion of biodiversity. India has also one of the world's largest network of protected areas including 533 national parks and sanctuaries providing *insitu* conservation. The development of Biosphere Reserves, Wetland Conservation Programmes, National Forest Action Plan, National Biodiversity Strategy and Action Plan are some of the steps taken by India at the national level to conserve bio-diversity.

## II

This study attempts to examine the steps taken at the international and national level to enforce the sustainability principles embodied in CITES, CBD and other Conservation Programmes. Another focus will be on how far India's Biodiversity Act conforms to the provisions of CBD.

The study follows an inductive method. Relevant informations from international organizations and government sources will constitute the primary sources of the study.

The study has attempted to test two hypotheses, namely, whether the convention on Biological Diversity is the result of compromise in the interest of developed and developing countries and whether India's national legislation on Biological Diversity Act conforms to the provisions of convention on biological diversity.

Objectivity has been the dominant concern in the analysis of the issues involved. An attempt has been made to put forth explanations of how the biodiversity conservation measures has divided North and South Countries. The focus of the study is to study the convention on Biological Diversity critically as well as to bring out the issue sand barriers which come in the way of mobilizing financial resources.

The first chapter provides a general definition of the concept of biodiversity, its components, direct and indirect value. It also raises the main concern on how to conserve biodiversity for future prospects by preventing its present threat.

The second chapter discusses the approaches taken by the Government of India since independence for sustainability of our environment. It also discusses the policies, programmes which includes both *ex-situ* and *in-situ* conservation measures.

The third chapter is about the steps taken at the international level to conserve biodiversity under Convention on International Trade in Endangered Species, 1973 and Convention on Biological Diversity, 1992. The chapter further analyses the six Conference of Parties held under the banner of CBD to implement their programmes.

The fourth chapter discusses in detail the steps taken by the government of India under the India's Biological Diversity Act, 2003. The main focus will be how far India has succeeded in adopting national legislative measures mentioned in Article 8 (k) of the Convention on Biological Diversity for the conservation of its rich biodiversity.

The fifth chapter concludes the finding of earlier sections and discusses the possible outcomes that can be adopted by India and other international bodies to conserve the biological resources for future uses.

## Chapter 1

### Bio-Diversity- An Introduction

#### INTRODUCTION

Bio-diversity in simple word refers to the enormous variety of life forms and their associations. It includes the parts, products, cell lines, genetic material, properties and characteristics of living organisms. It also includes species which we do not know, and whose function human beings do not have knowledge of<sup>1</sup>. The Convention on Biological Diversity defined the term biological diversity as “the variability among living organisms from all sources, including 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.”<sup>2</sup> In simple terms, it is the variety of life forms including their genetic make-up and all kinds of their assemblages.<sup>3</sup> It is also an expression of life, its maintenance in various forms and its organisations and interrelationships from molecular to biosphere levels.<sup>4</sup> Thus, the whole concept describe biological diversity in terms of three conceptual levels : eco-system diversity, species diversity and genetic diversity.

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<sup>1</sup> Vandana Shiva, Shalini Bhutani, Urvashi Prasad, Afsar H. Jafri's, "*An Activists Handbook on Biodiversity*". (New Delhi : RFSTE, 1999), P. 1.

<sup>2</sup> Article 2 of the Convention on Biological Diversity, 1992

<sup>3</sup> Vandana Shiva. "*Trainer's Training Manual for Sustainable Agriculture and Biodiversity Conservation*." (New Delhi : RFSTE, 1999), P. 2.

<sup>4</sup> Dina Mani Pokhral, "*Legal Aspects of Biodiversity Conservation*". (Nepal : Udaya Books, 2001). P. 16.

## **1.1 Components of Biodiversity**

### 1.1.1 Eco-system Diversity –

The structure of an ecosystem is determined by the existence of a number of species and the biological interactions among them. Thus an enormous diversity of ecosystems forms a part of biodiversity.

Conventionally, ecosystems are broadly described in three categories – terrestrial, fresh water and marine. Most of the biodiversity estimates have been made on different types of terrestrial ecosystems.<sup>5</sup> It is generally estimated that 80% of all species are terrestrial, and that tropical rainforests hold a major proportion of species diversity. Therefore, conservation of the ecosystem is essential for conserving species. Habitat destruction and fragmentation, chemical pollution, and over exploitation of component species are the most immediate anthropogenic\* threats to ecosystems<sup>6</sup>.

### **1.1.2 Species Diversity**

Species diversity refers to the existence of diverse species within the same genera and also the variety of species within a region<sup>7</sup>. The status of biodiversity is generally measured in terms of the species richness in a given habitat or location whether wild or domesticated occurring within a geographical area. Tropical ecosystems are more

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<sup>5</sup> See Vandana Shiva, n. 3. P. 3.

<sup>6</sup> *Ibid.*, p.3.

\*It means causes of extinction made by human being or communities.



species – rich than temperate areas, and the polar habitats are the least species. Thus, countries like Columbia, Mexico, Indonesia, Malaysia, Peru, and India etc have enormous species due to the occurrence of a rich diversity of vegetation ecosystems or types. According to the World Conservation and Monitoring Centre, the different ways to describe richness of species diversity are the basis for the observation that diversity increases with decreasing latitude on earth. Species diversity is also expressed as relationship of species to each other, which is also known as Taxonomic Diversity. For example, species like big cats, tiger, lion and snow leopard all belong to the same genera but they are different species. Thus, species diversity refers to the variety of species within a region and which can be measured in many ways.

### **1.1.3 Genetic Diversity**

The genetic diversity refers to the various kinds of ‘genes’ and they are the determiners of heredity character, which exists, in any individual species. Due to the diversity in genes, diversity in character occurs within a species-giving rise to “varieties” and “races”. For example, there are several varieties of mango, wheat and rice.

Genes are the principal units of heredity passed from one organism to its offspring. They are composed of nucleic acids and are found along

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<sup>7</sup>Semon Ashir Levin(ed.). *Encyclopaedia of Biodiversity*. Vol 6. (1). (New York : Academic Press. 2001). P. 420.

on organism chromosomes, in the plasmids of bacteria and in other extra-chromosomal forms as well.<sup>8</sup>

This pool of genetic variation present within an interbreeding population is acted upon by selection. A differential survival result in changes of the frequency of genes within this pool, and this is equivalent to population evolution. Thus, the genetic variation results in both evolutionary change and artificial selective breeding to occur.<sup>9</sup>

Genetic diversity also allows species to adapt themselves to the environmental changes – through evolving disease resistance, tolerance to climatic stresses, mechanisms for predator avoidance etc.<sup>10</sup> The loss of populations through habitat destruction and other anthropogenic factors cause genetic erosion, narrowing the evolutionary option of the species. In contrast, hybridisation and selection experiments conducted by humans have expanded the genetic diversity of a number of crops and domesticated animals. For example, the Indian rice *Oryza sativa* variety have been experimentally inter-crossed to obtain different combination of rice tracts (around 42000) for high yielding varieties (HYV) by modern agriculture.<sup>11</sup> For all this purposes, genetic diversity of the wild relatives of domesticated crops and animals must be conserved as a crucial element of biodiversity.<sup>12</sup>

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<sup>8</sup> See Dina Mani Pokharel n. 4.p.17.

<sup>9</sup> Brian Groombridge (ed), "*Global Biodiversity: Status of the Earth's Living Resources.*" (New York : Chapman and Hall, 1992). P. xiii.

<sup>10</sup> Sec. Vandana Shiva.n.3. p.3

<sup>11</sup> *Ibid.* p.3

<sup>12</sup> Kannamma S. Raman. "Conservation of Bio-diversity : Need of the Decade". *Social Action*. Vol. 47. 1997. P. 76.

## **1.2 Importance of Biodiversity**

The biological diversity of our planet, if properly managed, can support the world's population into a foreseeable future by making and conserving biological diversity for its sustainable use. It is bio-diversity that nurtures people, contributing to long-term food security for all. Biodiversity forms the foundation for sustainable development. It is the basis for the environmental health of our planet and the source of economic, ecological, agricultural and other utilitarian needs for future generations.<sup>13</sup> Biological diversity has also material, spiritual and psychological value. For this reason, biological diversity is the foundation upon which human civilisation are built and values of the human society are intact with it.

There are two types of the values of earth's biological resources, i.e. direct values (consumptive uses and productive uses) and indirect values (non-consumptive uses and options for the future).

### **1.2.1 Direct Values**

The most important direct use of biological resources is food plant species which provide the largest number of food stuffs of which only a small percentage of these are nutritionally significant on a global level and very few have been intensively managed on a commercial scale. Human beings have used about 5000 species of plants as food since time immemorial. It is done through conscious and unconscious selection

process, which require soil microorganisms, and, in a few cases, pollinators to develop and spread domesticated plants and animals for its use.<sup>14</sup> In addition to this food value of biodiversity, it has great value for medicinal, agricultural and industrial items.

#### **1.1.1.1 Agricultural Value**

The value of variety is partially apparent in agriculture for generations people have raised wide range of crops and livestock to establish and enhance productivity.

The genetic diversity found within individual crops is also of tremendous value. Genetic diversity provides an edge in the constant evolutionary battle between crops and livestock. In old age system, several genetically distinct varieties of crops are planted together as a hedge against crop failure.<sup>15</sup>

#### **1.2.1.2 Medicinal Value**

Medicinal drugs derived from natural sources make an important global contribution to healthcare. In traditional medical practices, plants or their extracts are directly consumed or applied as preventives or medicines. In allopathic system too, around 120 pure chemical substances extracted from about 90 species of higher plants are used in medicine. For example, the most widely used cardiotoxic stimulant

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<sup>13</sup> Har Darshan Kumar. "*Bio-Diversity and Sustainable Conservation*". (New Delhi : Oxford and IBH Publishing, 1999). P. 16.

<sup>14</sup> *Ibid.* P. 20.

<sup>15</sup> Senjeev Saxena and P.L. Gautam, "Conservation of Biodiversity Present and Future Strategies". *IASS/Quarterly*. Vol. 17(4), 1999. P. 35.

digitoxin is extracted direct from dried digitalis (foxglove). Thus, the medical benefits of the biological resources are not limited to plant compounds. A host of microbial, antiviral, cardioactive and neurophysiologic substances have been derived from poisonous marine fauna. The venoms of various arthropods too have medical potential. Domesticated animals have given us hormones and enzymes. While fungi and microbes provide life saving drugs such as antibiotics, penicillin and tetracycline. The possibilities for medicines from biological resources are immense and still very much open. Thus, the World Health Organisation (WHO) has also estimated that 80% of people in the developing countries rely on traditional medicines for primary health care. Similarly, animal products obtained from marine are also used in medicinal products like anti-cancer drugs.<sup>16</sup>

### **1.2.1.3 Industrial value**

The biological resources also form the primary sources for industrial products. Biodiversity provides raw materials for various kinds of industries. We all use timber in some form or the other as fuelwood or inhouse construction or as furniture<sup>17</sup>. The paper we use for writing also comes mostly from bamboos and trees. Similarly, fabric, soaps, cosmetics, photographic films, tyres, plastics and several industrial processes are derived from plants, timber and other natural resources.

### **1.2.1.4 Food Value**

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<sup>16</sup> See Brian Grombridge. n. 9. P. xvii.

One of the most fundamental values of the biological resources is providing the world's food. All the three components of biodiversity such as genetic, species and ecosystem can contribute to agricultural systems. 70% of human nutrition is provided just by seven species, i.e. wheat, rice, maize, potato, barley, sweet potato and carinata. The first three provide more than 50% food. In many countries, wild birds, mammals, reptiles, fruits and vegetables are also principal sources of food.<sup>18</sup> Many wild plants have also given multipurpose varieties that are commercially more valuable.

#### **1.2.1.4 Pest Control and Pollination**

Natural ecosystems control an estimated of 99% pests and diseases that can potentially attack crops or domestic animals. Most of the potential pests are herbivorous insects which are controlled primarily by predacious insects that consume them. This service has been disrupted by the misuse of artificial insecticides because pests are generally less susceptible to pesticides than are their predators, resulting serious threats to both agriculture and public health. Natural ecosystems provide crop plants with stable climates, water, soils, nutrients and protect them from pests.<sup>19</sup>

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<sup>17</sup> S.K. Aggarwal, Swarnlata Tiwari and P.S. Dubey (ed.). "*Biodiversity and Environment*". (New Delhi : A.P.H. Publishing Corporation. 1996).

<sup>18</sup> See. Har Darshan Kumar.n. 13. P. 18.

<sup>19</sup> *Ibid.* p.19.

### 1.2.2 Indirect Value

Biological resources, on the other hand, provide values which are not immediately seen or even felt but which nevertheless have far reaching impact on our living conditions. Forest ecosystems help regulating water discharge and influence local climate conditions or even the global climate. Most of all, the reason for protecting the biodiversity is that it has immense recreational value. Eco-tourism is developing fast as a profitable industry. But it is necessary to strike a balance between conservation of environment, its use for tourism and rights of the local inhabitants. Wilderness areas, including sanctuaries, national parks and biosphere reserves therefore have an immense recreational value, in addition to their functions as many people travel to see the beauty of the nature.<sup>20</sup> Besides these, many indigenous cultures have a built-in “ecologic” where cultures of hunter-gatherers and shifting cultivators recognize the bequest value of the natural heritage and uphold a community responsible for conserving their ancestral ecosystem for future generations.<sup>21</sup> If they do not do, there will be erosion of biodiversity that inevitably result in the loss of local knowledge systems and destruction of cultural diversity. Thus, bio-diversity must be conserved, not only for necessity, but also as a matter of principle.

It is also evident that for some cultures, ethical beliefs provide the strongest grounds for maintaining biological diversity especially in

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<sup>20</sup> A.H. Ansari and Parveen Jamal. “The Convention on biological Diversity : A Critical Appraisal with Special Reference to Malaysia.” *Indian Journal of International Law*. Vol. 40, 2000. P. 145.

<sup>21</sup> Vandana Shiva. “*The Enclosures and Recovery of Commons*”. (New Delhi : RFSSTE. 1999).

densely populated areas of eastern countries where religious practices attributed directly to the bio-diversity conservation. However, without recourse to an absolutist moral code, it is difficult to argue compellingly for an ethical imperative for the maintenance of all existing biological diversity.<sup>22</sup> There are some people who objected to the killing of any living organism, which again creates problem in extending the argument of the conservation of the bio-diversity morally. At another level, those individual organisms that represent diversity genetically also prescribe destruction if one follows morally. For example, objection to the killing of an elephant is understandable on moral grounds but eating wheat grown on genetically diverse seeds should not be objectionable. Similarly, there are difficulties in demonstrating that a species, which is to some extent, a human construct, has any greater right to existence as an entity than any of the individuals of which it is comprised. Nevertheless, the fact remains that ethics provide a powerful argument against the destruction of biological diversity.

### **1.3 Threats to Biodiversity**

The conservation of biodiversity was always taken for granted because it was built into our daily lives. With the disruption of our normal life by the destruction of our cultures of conservation, our sustainable system of production and consumption, the threats to biodiversity have become threats to survival itself. Today the diversity of ecosystems, life forms and ways of different communities is under threat

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<sup>22</sup> See. Brian Groombridge, n.9, p. xviii.



of extinction due to development projects and the pressures of economic globalisation.<sup>23</sup> Biodiversity erosion starts a chain reaction. The disappearance of a species is related to the extinction of other species, which are interrelated through the food chains. Biodiversity erosion thus leads to ecological and social vulnerability. The erosion in turn threatens the very existence of a large majority of our biodiversity and the people directly dependent on it.

There are multiple causative factors for the extinction of a species, which may be anthropogenic or natural.

#### **1.4 Natural Extinction threats**

The past extinction of species are known to have taken place due to meteorological and geological catastrophes such as volcanic eruptions, meteor impacts and accumulated global climate change. For example, the largest of the mass extinctions occurred before 150 million years ago, which eliminated 80% of the entire marine animal genera. There are also background extinction rates for organisms with narrow geographical ranges.

#### **1.5 Threats from human activities**

Man made activities has led to higher extinction of biological resources than natural threats. Plants and other invertebrates have been lost due to colonization and clearing of forest areas for settlement,

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<sup>23</sup>Sunil Sadhukhan, Shyamali Sadhukhan and Sanat Guchhait, "Bio-diversity-Some Reflections On its Connotation". *Geographical Review of India*. Vol. 60.(4).p.453.

agricultural expansion, commercial logging, large hydel schemes and livestock pressures etc. All these not only decrease the overall population of many species but also breakup their distribution pattern and render them into smaller vulnerable areas of extinction. Twenty mammals have already been recorded to become extinct from the earth in this century, and more than 2000 extinctions have occurred in the last 2000 years. At least 3366 animals and 26106 plants are globally threatened. Apart from species in the wild numerous breeds of livestock and land races of agricultural crops are threatened due to recent changes in land use patterns and replacement of indigenous varieties of crops and breeds of animals by exotic ones.

Besides this, the anthropogenic causes of extinctions involve habitat destruction, habitat fragmentation, change in habitat quality, introduction of exotic species, and prosecution (hunting) and exploitation of species by humans. Anthropogenic loss of natural habitats seems to be the main cause of the present high rate of extinction.<sup>24</sup>

Virtually any form of sustained human activity results in some modification of the natural environment, which may result fragmentation of landscapes, disruption of migration between local populations and decline in population growth rate. Such processes lead to raise probabilities of extinction within a short span of time.

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<sup>24</sup> Clem Jesdell (ed) "Biodiversity Conservation And Sustainable Development-Principles and Practices With Asian Examples."(Inc.USA:Edward Elgar Publishing,1999),p.227.

On the other hand, introduction of non-native organisms to new environments also causes destruction of native ecological communities. In India, the introduction of carps for intensive pisciculture has caused extinction of native fishes like *Schizothora spp.* Similarly, thousands of landraces of indigenous rice are known to have disappeared from the country due to the modern practice of monocultures of a few exotic hybrid rice varieties.

Overkill and overexploitation of organisms by humans constitute a special cause of extinction of species. For instance, extinction of the Cheetah in India has been due to the combined effect of habitat destruction and hunting.

To sum up, the loss of biodiversity is caused by the following reasons:

1. Expansion of urban / industrial complexes and human settlements.
2. Over-exploitation of plants and animal species for commercial purposes.
3. Habitat destruction due to dams, highways and mining operations in the biodiversity rich areas like forests.
4. Introduction of exotic species, which causes major disturbances to ecosystems, because the checks and balances that hold the equilibrium in the native ecosystem do not apply to, introduced species.

5. Toxic pollution is another major cause of biodiversity depletion. Millions of species have disappeared because of toxic pollution due to pesticides, herbicides and toxic waste from industry.
6. The emergence of new intellectual property regimes creates new conflicts over biodiversity between private and common ownership, between the global and local needs. Patent protection transforms farmers into suppliers of free raw material, displaces them as competitive and makes them totally dependent on industrial supplies for vital inputs like seeds.
7. The emergence of new biotechnology has converted life support base for poor community to raw material base for powerful corporations and threatens to further displace and destroy biodiversity. The introduction of genetically engineered organisms has potentially high risks for biodiversity.

## **2.6 The need to conserve Biodiversity**

Biodiversity is the means of livelihood for the poor and their source of basic needs for nutrition and health care. Varied indigenous communities (pastoral, fishing, peasant, hunting, gathering and tribal) have evolved knowledge and skills to derive sustainable, equitable livelihoods from the earth's rich biodiversity. The life of communities was enhanced spiritually and culturally as they enriched earth's biodiversity.<sup>25</sup>

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<sup>25</sup> R.K. Sinha (ed.). "*Biodiversity Global Concerns*". (New Delhi : Commonwealth Publishers, 1996).

Biodiversity has multiple values for the users. In India 70% of healthcare is accounted for by indigenous systems of medicines (Ayurveda, Unani and Siddha) using 7500 species of plants. Biodiversity has also special meaning in different cultural contexts like sacred groves, sacred seeds, and sacred species. The economic values are in the form of direct consumption, commercial exploitation, and ecological benefits such as watershed, soil, production etc. Biodiversity provides functional interrelationships between ecosystems. Keeping alive the biological resources in all their diversity is today a challenge that becomes all the more intense with every passing day. Therefore, we need to keep in mind that conserving biological diversity means conserving life.

## CHAPTER II

### INDIA'S APPROACH TO BIODIVERSITY CONSERVATION

Biodiversity, which is defined as the variety and variability among living organisms and the ecological complex in which they occur, is measured at three levels- the gene, the species and the ecosystem. India is one of the 12 mega biodiversity centers in the world. The country is divided into the biogeographically regions viz: Trans-Himalayan, Indian Desert, Semi arid, Western Ghats, Deccan Peninsula, Gangetic plains, North-East India, Islands and coasts. Biogeographically, India is situated at the tri-junction of three realms namely Agrotropical, Indo-Malayan and Paleo-Arctic which makes the country rich and unique in biological diversity.

India has a forest cover of 76.78 million hectare of recorded forest area of which only 64.20 million ha can be classified as actual forest cover. It also consists 37.74 million ha of dense forests, 25.51 million ha of open forests and 0.487 million ha of mangroves and 5.79 million ha of scrub<sup>1</sup>. These range from the tropical wet evergreen forests in the north-east to the sub-alpine and alpine forests of the Himalayan through the tropical dry deciduous and tropical thorn forests of Central and Western India, Deserts cover 2% of the Indian landmass which include the Sandy Thar Desert of Western Rajasthan and adjoining states, the salt desert of Kutch and the high altitude cold deserts of Jammu and Kashmir and

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<sup>1</sup> Annual Report, Ministry of Environment and Forest (1999-2000)

Himachal Pradesh. The wetlands which include a rich diversity of inland and coastal wetland habitats covering 4.1 million ha of the landmasses are associated with a number of rare and threatened species of plants and animals. So far India has discovered more than 47,000 species of animals over just 70% of the country's total areas (see table 1) and accounting 7.31% of the animals species in the world. The endemism of Indian flora is concentrated mainly in the North-East, Western Ghats, North West Himalaya and Andaman and Nicobar Islands. On the other hand, about 62% of the known amphibian species and 50% of the lizards are endemic to India occurring mainly in the Western Ghats (MoEF, 1999)

**Table 1. India' Biological Wealth**

<b>(A) Plants</b>	<b>Species</b>
Flowering plants	15000
Pteridophytes	1022
Bryophytes	2584
Lichens	1600
Fungi	23000
Algae	2500
<b>Total</b>	<b>48706</b>
<b>(B) Animals</b>	<b>Species</b>
Mammals	372
Birds	1228
Reptiles	428
Amphibians	204
Fishes	2546
Molluscus	5000
Insects	40000
<b>Total</b>	<b>49778</b>

**Source :** Zoological Survey of India, Calcutta

Besides these, the country is bestowed with immense agro-biodiversity and a rich diversity in landraces, cultivators of crops or domesticated breeds of animals. India has 326 species of wild relatives of crop plants and 49 indigenous major and minor crops (including cereals, millets, pulses, oilseed, crop, vegetables, tuber crops, fruits and fiber crops). India is the centre of origin of 30,000 –50,000 varieties of cultivated plants including rice, pigeonpea, mango, pepper, bamboo, turmeric, cinnamon, etc. Thus India is better known for its medicinal and aromatic plants..

India also occupies a pre-eminent position with respect of animal genetic resources, which fall within the mandate of Indian Council of Agricultural Research (ICAR). Genetic diversity comprising native species and landraces is concentrated in the areas of the Western Ghats, North Eastern Himalayas, Southern Plateau, Central India and North Western Himalayas. Domesticated live-stock and poultry include 26 breeds of cattle, 8 breeds of buffalo, over 42 breeds of sheep, 20 breeds of goats, 7 breeds of camel, 8 breeds of horse and a few type of pigs (MoEF, 1999). Among the fish genetic resources, out of about 20000 species of the world, nearly 1 percent have been recorded in India, including the finfishes from the Western and Eastern Ghats. All these immense diversity has resulted in the inclusion of two of Indian hotspots- Western Ghats and North-East region in the 25 global biodiversity hotspots. The Indian eco-regions are the Chhota Nagpur Dry Forests, Eastern Deccan Plateau Moist Forests, Eastern Himalayan Alpine Meadows, Indus River



Delta Lakshwadeep atolls, Naga Manipur Chin Hills Moist Forests, Rann of Kutch Flooded Grasslands, Sunderbans Mangroves, Terai Duar Savannas and Grasslands, Tibetan Plateau Steppe, Western Ghat Rivers and Streams and Western Himalayan Temperate Forests. India accounts for 6 percent for the total number of worlds's ecoregions.

However, the ecological balance of flora, fauna and forests is being drastically disturbed by the rapid increase in human population. The growing urbanization and industrialization costs the decrease of natural habitats of our species, which further results, the loss of biological diversity. Biodiversity, once lost, cannot be recovered. Several plant and animal species which are rare, endangered or threatened (Table 2) with extinction are being lost due to the following factors:

- ◆ Reduction of its habitat area
- ◆ disappearance of its prey
- ◆ the relentless persecution of certain animals by men.

**Table ( 2) : Rare and Threatened Species**

<b>Category</b>	<b>Approximate No.</b>
Rare	237
Vulnerable	117
Endangered	170
Possibly extinct	38
Extinct	21

**Source** : Botanical Survey of India, Calcutta (1999)

India has a rich ethos of biodiversity conservation and traditional knowledge system that have given rise to informal and localized *insitu* conservation. Traditional farming practices are directly responsible for

the country's treasure, trove of agro-diversity. The government of India has institutionalized biodiversity conservation by undertaking several activities for its conservation and sustainable use.

## **2.1 REVIEW AND ANALYSIS OF INITIATIVES FOR BIODIVERSITY CONSERVATION IN INDIA**

The concept of biodiversity conservation is not new to India. The rich cultural diversity shows the presence of various plants in a village and its use by the community. It has provided medicinal plants, food, fuel and fodder. Many local taboos, practices and folklore grew up around the forest and wildlife that led to the creation of sacred forests, trees and tanks with supernatural powers. For example, plants such as *Ficus benghalensis*, *F. religiosa*, *Magnifera indica*, *Asparagus*, *Recimosus*, *Helicteres isora* etc. are commonly used in performing various rituals and are planted by villagers in their country yard or farm yard.

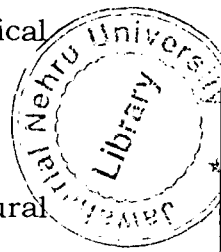
Sacred groves are another unique tradition, which have been responsible for preserving bio-diversity in its original locality. Snakes and monkeys are considered sacred and worshiped by people in some parts. India has been at the forefront to conserve biodiversity found in different regions and over the years the country has set in place several institutions and measures for the conservation and sustainable use of biodiversity.

### 2.1.1 LEGISLATIVE AND POLICY INITIATIVES

The Ministry of Environment and Forests (MoEF) is the nodal agency in the Government of India for planning, co-ordination and overseeing the implementation of environmental and forestry programmes. The mandates of the ministry include survey of flora, fauna, forests and wildlife and conservation of natural resources. These objectives are supported by legislative and regulatory measures. A number of institutions have been set up under the MoEF's umbrella such as the Zoological Survey of India and Forest Survey of India to assesses the flora, fauna and forest areas, with a view to develop an accurate database for planning and monitoring purposes. The Wildlife Institute of India also undertakes studies of endangered species of animals and critical ecosystems.

Many autonomous institutions such as the Bombay Natural History Society (BNHS), French Institute, etc., have also contributed extremely for the identification and documentation of biodiversity.

The Indian constitution has enshrined the concept of environmental protection under Article 48A and 51 A (G) of the Directive Principles of State Policy which states that "the state shall endeavor to protect and improve environment and to safeguard the forests and wildlife in the country" and "to protect and improve the national environment including forests, lakes, rivers and wildlife and to have



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compassion for the living creatures.”<sup>2</sup> It is not binding on the courts but such a formulation is important for conservation measures in interpreting laws and policies.

The National Wildlife Action Plan (NWAP), 1983 was a landmark document that laid the foundation for the establishment of a network of protected areas to cover representative samples of all major wildlife ecosystem. It also provided for a wide spectrum of wildlife activities including the setting up of botanical and zoological gardens, research and monitoring facilities and the control of wildlife trade and poaching. An updated version of the plan operative from 2002-16 is now in place.<sup>3</sup> The National Conservation Strategy and Policy Statement on Environment and Development in 1992, along with the National Forest Policy, is a major policy instrument of the government for integrating conservation considerations on agriculture, irrigation, animal husbandry, industry, mining, tourism etc.

The Forest (Conservation) Act, 1980 controls diversion of forest land for non forest purposes. The Wildlife (Protection) Act, (WLPA) is the most significant statute on wildlife conservation in India. Under it the protected areas have been created or given local protection. The WLPA was India’s first comprehensive national legislation covering the whole country. It also provides three categories i.e. national parks, sanctuaries and closed areas for a broad range of bio-diverse resource conservation. It

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<sup>2</sup> D.D Basu, “*An introduction to Indian Constitution,*” (Delhi: Wadhwa and Company Law Publishers, 2001) p.146.

<sup>3</sup> See, MoEF Agenda 21, An Assessment, 2002

can include reserve forests, protected forests, revenue land including lands that were once used as common property resources by villagers and private land. The highest degree of protection is accorded to national parks where no human interference is permitted, but in case of sanctuaries certain rights may be permitted by the collector in consultation with the Chief Wildlife Warden. Within its legal mandate, the WLPA prescribes both prohibitive and permissive provisions for the use of the categories of protected areas

To protect our eco-system, forest management and its conservation is also a vital task. The National Forest Policy of 1988, (NFP) emphasizes the ecological role of forests, and the meeting of rights and concessions from them to be primarily used by the communities living within and around the forest areas, especially tribals. The policy also clearly states that "the principal aim of forest policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which are vital for sustenance of all life forms, human, animal and plant. The derivation of direct economic benefit must be subordinated to this principal aim."<sup>4</sup>

The 1988 Forest Policy was articulated through the Joint Forest Management (JFM) guidelines issued in 1990 and revised in 2000, which provided for village communities involvement in the protection and regeneration of forests.

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<sup>4</sup> *Ibid.*, p.191

The Eco-development programme is another initiative for local communities intervention aimed at enhancing agriculture, rural development, minor irrigation, raising fuel and fodder plantations etc.

The Environment Protection Act, 1986 was the response for a general legislation on environment protection. Under this act, in 1991, the MoEF issued a notification for the protection of coastal areas known as Coastal Regulations Zones (CRZ) that led to the formulation of State-level Coastal Zone Management Plans.

## **2.2 PROGRAMMES FOR CONSERVATION AND MANAGEMENT.**

### ***2.2.1 Insitu Conservation.***

*Insitu* conservation involves the preservation of a species in its original habitat, which helps not only in preserving macro flora and fauna, but also enables continued evolution of a species through segregation, mutation and recombination. India has an extensive system of protected areas comprising 89 national parks and 496 sanctuaries covering an area of 1.83 lakh sq.km in the major biogeographical zones of India. For example, The Tura Range in the Garo Hills of Meghalaya is a gene sanctuary for preserving the rich native diversity of wild *Citrus* and *Musa* species.

The Ministry of Environment and Forests also constituted the National Afforestation and Eco-development Board (NACB) in August 1992 to promote afforestation and management.

Twelve bio-diversity rich areas of the country (see Table 3) have been designated as Biosphere Reserves applying the UNESCO criteria with the following objectives.

(i) To conserve for present and future human use the diversity and integrity of biotic communities of plants and animals within the natural ecosystems and to safeguard the genetic diversity of species in which their continuing evolution depends.

(ii) To provide these areas for ecological and environmental research including baseline studies, both within and adjacent to these reserves.

**Table 3 : Biosphere Reserves In India.**

Site	Location
Nilgiri	Western Ghats (Tamil Nadu, Kerala and Karnataka)
Nanda Devi	West Himalayas (Uttaranchal)
Nokrek	Meghalaya
Manas	Assam
Sunderbans	West Bengal
Gulf of Mannar	Between India and Sri Lanka (Tamil Nadu)
Great Nicobar	Andaman and Nicobar Islands
Similipal	Orissa (Deccan Peninsula)
Dibru-Saikhowa	Assam
Dehang Debang	Arunachal Pradesh
Pachmarhi	Madhya Pradesh and Gujarat
Kanchanjunga	Sikkim

**Source :** MoEF's Annual Report (2001).

The Nilgiri Biosphere Reserve has been recently approved for inclusion within the International Network of Biosphere Reserves recognized by UNESCO. Five natural sites have been declared as World

Heritage sites including Kaziranga National Park, Keoladeo Ghana National Park, Manas Wildlife Sanctuary, Nanda Devi and Sunderban National Park under the World Heritage convention.

Project Tiger, initiated in 1973, in response to the alarming decrease in the protection of wild tigers and their natural habitats has grown over the years to 27 tiger reserves in 14 states covering an area of 37,761 sq.km. Such measures have not only benefited the tiger but acted as an umbrella programme for other endangered species such as the swamp deer, elephant, rhino & wild buffalo, apart from protecting large swamps of habitat. The second phase of Project Tiger has expanded the programme to include the establishment of guidelines for tourism in tiger reserves, establishment of nature interpretation programmes, integration of local population through eco-development programmes and management of buffer areas.

Project Elephant is another landmark conservation initiative to protect the Asian elephant that was formally launched in 1992 on the recommendations of a taskforce set up by the MoEF in 1990. The objective is to assist states having a range of wild elephants to ensure the long-term survival of identified viable population of elephants in their natural habitats by providing the range states with financial as well as technical and scientific assistance. Project Elephant is aimed at the ecological restoration of existing natural habitats and migratory routes of elephants, development of scientific and planned anti-poaching measures as well as enhanced research training and training. And other *in situ*



conservation of mammals includes the Indian lion, rhino and aquatic mammals including river dolphins. The Indian Council of Forestry Research and Education (ICFRE) has identified 309 forest preservation plots of representative types for conservation of viable and representative areas of biodiversity. Of these, 187 plots are in natural forests, 112 in plantations covering a total area of 8500 hectares. (MoEF, 1999)

Besides these, Wetland Conservation has been a priority for the government since the late 1980s. In 1986/87, the Indian government initiated a programme on the conservation and management of mangroves and coral reefs and a national committee was constituted to advise the government on policy and management aspects of mangrove ecosystems. Fifteen mangroves and four coral reefs were identified for conservation and management and state-level steering committees have been formed to coordinate the implementation of management action plans for these areas. The Indian Coral Reef Monitoring Network was set up to cover activities relating to coral reefs including research and monitoring, training and capacity building, establishment of a data base etc.

For the conservation of medicinal plants, the State Forest Departments of Kerala, Karnataka and Tamil Nadu has established 30 Medicinal Plants Conservation areas as well as 15 parks to store the germplasm of threatened rare and endemic medicinal plants. *In situ* conservation of agro-biodiversity has been strengthened through the

steps taken by the government and NGOs to protect the traditions of farming communities.

### **2.2.2 EXSITU CONSERVATION**

Such conservation has been institutionalized by setting up botanic and zoological gardens, tissue culture repositories or through long term storage of seeds in gene banks including the National Bureau of Plant Genetic Resources (NBPGR), the National Bureau of Fish Genetic Resources (ICAR) and the Tropical Botanic Garden and Research Institute. The Indian National Gene Bank was set up by NBPGR to house collections of indigenous germplasm, seeds, propagules, safe keep duplicate germplasm of other organizations and carry out the distribution and exchange of material. The choice of the method is based on its merits in utility, security, complementarity and the advantages over the other available techniques.<sup>5</sup>

The Central Zoo Authority has been set up to oversee the functioning of zoos, carry out planned breeding programmes and has provided detailed guidelines to zoos to monitor their activities. There are about 300 zoos, animal parks and aquaria of about 300, and 34 other botanical gardens including the National Botanical Garden in NOIDA(UP). Besides these, Botanical Survey of India has large holding of 1,500,000, species of biodiversity which has been preserved in the form of Herbaria. NGOs are

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<sup>5</sup> Sanjeev Saxena & P.L. Gautam, "Conservation of Biodiversity-Present and Future Strategies," *IASSI Quarterly*, Vol.17. No.4: 1999, p.41

also active in *exsitu* conservation of reptiles including the Chennai Snake Park, Madras Crocodile Bank and Calcutta Snake Part etc.

These are some of the policies, regulations, plans and programmes adopted by the government of India for the preservation and sustainable use of biological diversity. Despite of all these great strides, there is a need for greater community awareness on issues concerning biodiversity and its permeation into all sectors of developmental planning. The bio-diversity conservation programme, which aims at the conservation of species diversity, genetic diversity and ecosystem diversity are found in different regions. The first step in the direction of bio-diversity conservation should aim at the conservation of the species diversity, which is closely related to the amount of undisturbed habitat available. Another second step should be diminishing the inherent genetic variation within the range of the better parent material for higher yield per unit area and also higher resistance against diseases and environmental pressures like drought, water losing and excessive salinity

For the well being of our people, sustainable use of genetic resources is crucial. In order to develop an effective strategy, so far attention has been paid for the conservation of biodiversity through national parks, sanctuaries, biosphere reserves and other protected areas. However, conservation efforts towards plant species have not been given adequate attention particularly of those, which are of potential and economic and scientific value. The other important aspect to incorporate is rehabilitative strategy for rare, threatened and endangered plant and

animal species. There is further need to develop facilities for long and short-term conservation through seed gene banks, tissue culture gene banks, pollen storage and establishment of genetic enhancement centers for producing good quality of seeds.

## **Chapter III**

### **INTERNATIONAL APPROACHES TO BIODIVERSITY CONSERVATION**

Global threats to biological diversity have been very recently recognized amongst scientists and environmentalist groups. Biological diversity includes all life forms on the earth and is a life support system, which is essential for the normal functioning of eco-systems and the biosphere as a whole. It has great significance for its ecological, social, economic, cultural and ethical values. The importance of the biodiversity conservation was known to the world even in the olden days, but only small fractions of endangered species especially mammals and birds were the subject of conservation. Nowadays, various flora and fauna and a large variety of species are protected with the specific aim of promoting the conservation of biological diversity as the survival of species are dependent on its existence.

Looking at the worldwide destruction of the biological diversity, aquatic and terrestrial movement of genetic resources from one country to another country, their economic importance and sharing of their benefits, a comprehensive approach to conservation of the biodiversity is required. In fact, for the first time, the declaration at the Stockholm conference, in 1972, highlighted the universal basic legal principles relating to the conservation of biological diversity. Subsequently in October 1982, the UN General Assembly adopted and solemnly proclaimed the world charter for nature for the conservation of the

genetic variability of the earth and all life forms and their habitats on the earth. Both these are presently not binding but they have universal importance for the conservation of biological diversity in the form of comprehensive treaties.

Important international measures which focus on the conservation of biological diversity with conservation and protection of species or habitats are : Ramsar Convention on Wetlands of International Importance specially on Waterfowl Habitat, 1971; Convention for the Promotion of the World Cultural and Natural Heritage, 1972; Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) 1973; Convention on the Conservation of Migratory Species of Wild Animals, 1979; UN Convention on the Law of the Sea, 1982; World Charter for Nature (1982); Rio Declaration in Environment and Development, Forest Principles and Agenda-21 (UNCED); Convention on Biological Diversity (1992); and The Draft International Covenant on Environment and Development (1995) have been adopted for protecting environment and preventing contamination of the environment from pollutants which are injurious to human health and environment including biological diversity.

From all these treaties, only two i.e. the 1973 CITES and the 1992 Biological Diversity Convention adopted under the auspices of the United Nation Convention on Environment and Development (UNCED) has the potential provisions to deal with all species and habitats on the planet for the conservation of biological resources. This chapter is an

attempt to discuss the major international convention which have been adopted for the protection of biological diversity.

### **3.1 Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971 (Ramsar Convention).**

This convention was adopted with a view to the conservation of wetlands of international importance especially as waterfowl habitats. It provides a framework for international cooperation in the conservation of wetland habitats. The broad objective of the Ramsar convention are to reduce the loss of wetlands and sets a precedent international environment law as one of the first international agreements with global coverage.

The contracting parties in the convention recognize the interdependence of man and his environment and considered the fundamental ecological function of Wetlands as regulators of water regimes and as habitats supporting a characteristic flora and fauna especially waterfowl.<sup>1</sup> They also assert that Wetlands constitute an economic, cultural, scientific and recreational resource whose loss would be irreparable and that their conservation can be ensured by adopting national policies with well coordinated international action.<sup>2</sup> Under the convention, each contracting party shall consider its international responsibilities for the conservation, management and wider use of

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<sup>1</sup> Dina Mani Pokaharel, *Legal Aspects of Biodiversity* (Nepal: Udaya Books, 2001) p.24.

<sup>2</sup> *Ibid* 24-30

migratory stocks of waterfowl<sup>3</sup> and shall promote the conservation of wetlands and waterfowl by establishing natural resource on wetlands.<sup>4</sup>

Thus, the Ramsar Convention may serve as a model for future habitat protection agreement and particularly for the international effort to preserve biodiversity. Furthermore, it requires each party to encourage research and the exchange of data and publications regarding wetlands and their flora and fauna.

### **3.2 Convention for the Protection of the World Cultural and Natural Heritage, 1972.**

The UNESCO at its 17<sup>th</sup> session in Paris from 17 October to 21 Nov, 1972, adopted this convention, where the parties recognize that the deterioration or disappearance of any physical part of cultural and natural heritage constitute a harmful appearance to the heritage of all nations and therefore, cultural and natural heritage held to be preserved as part of the world heritage. The motive behind this convention is the concept of “World Heritage” which recognizes the interest of the world community in certain parts of the environment, which are of “outstanding universal value” in states territories.<sup>5</sup>

Under the convention, natural heritage includes natural features consisting of physical and biological formations or groups of formations,

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<sup>3</sup> Article (1) of Ramsar Convention, 1971

<sup>4</sup> Article 2(6) and 4(1) of Ramsar Convention, 1971.

<sup>5</sup> Patricia W. Birnie and Alan E. Boyle, “*International Law and the Environment*” (Oxford: Clarendon Press, 1992), p. 460.



ecological and physiographic functions, precisely delineated areas that constitute the habitat of threatened animals and plant species.<sup>6</sup>

Article (5) is one of the main articles to ensure the protection of cultural and natural heritage. It tries to ensure that effective and active measures are taken for the protection, conservation and preservation of the cultural and natural heritage situated on the territories of contracting states by ensuring the following efforts.

- To adopt a general policy which aims to give the cultural and natural heritage function in the life of the community and to integrate the protection of that heritage into comprehensive planning programs.
- To develop scientific and technical studies and research and to work at such operating methods which make the state capable of contracting the dangers that threaten its cultural or natural heritage.
- To take the appropriate legal, scientific, administrative, technical and financial measures necessary for the identification, protection, conservation, preservation and rehabilitation of this heritage.

The convention is also supported by a set of comprehensive operational guidelines which are published and regularly updated by the World Heritage Committee. In addition, UNESCO has several recommendations concerning the protection, at a national level, for the cultural and natural heritage, where they are being threatened due to

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<sup>6</sup> Article 2 of the Convention for the Protection of the World Cultural and natural heritage.

unsustainable developments. Thus, each state should formulate, develop and apply a policy to coordinate and make use of all scientific technical, cultural and other researches to secure the effective protection, conservation and preservation of the cultural and natural heritage, which will make it a part of the nations social, economic, scientific and cultural life for the present and future generations.

### **3.3 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1973.**

CITES is one of the international conventions which has emerged most strongly in recent past for the cause of biodiversity conservation adopted at Washington on 3 March, 1973 and entered into force on 1 July, 1975. It is designed to establish a system by which states may strictly control international trade in specimens of species, which are at the verge of extinction. The convention makes an attempt to halt the rapid depletion of wildlife, which is being realized by the international community as a growing danger. It also provides international coordination in trade controls for wild fauna and flora with those unfavorable conservation states through the acceptance of obligation under the international law. The goal of the treaty is to control, reduce or eliminate international trade species whose conditions suggest that further removal from their natural habitat would be detrimental to the species survival. CITES also establishes joint responsibility in the control of the trade by importing and exporting states, as well as establishing a forum and mechanisms for government and governmental agencies to

work together, to identify, address and resolve wildlife trade problem.<sup>7</sup> Its international trade control mechanism serves as a basis for regulating international trade in wild plants and animals that are threatened by trade, as well as those that could become threatened if they are traded without controls.<sup>8</sup>

### **3.3.1 Contents of the convention**

#### **3.3.1(a) Categories of species**

There are three categories of species mentioned in fundamental principles of under article (II).

1. Appendix (I) includes all species threatened with extinction which are or may be afflicted by trade.
2. Appendix (II) includes all species which may be threatened with extinction in the future.
3. Appendix (III) includes all species listed by individual parties as being subject to regulation within their jurisdiction for the purpose of preventing or restricting exploitation, and as needing the co-operation of other parties in the control of trade.

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<sup>7</sup> R.A. Malviya, "Biological Diversity and International Environmental Law with Special Reference to the Biological Diversity Convention." *Indian Journal of International Law*. vol. (4), 2001.

<sup>8</sup> Timothy Swanson, "Why is there a biodiversity convention? The international interest in centralized development planning" *International Affairs*, Vol. 75(2), April 1999. P.321.

### **3.3.1(b) The Need for Domestic Legislation to Implement the Conventions**

The convention shall in no way affect the right of parties to adopt strict domestic measures regarding the conditions for trade, possession or transport of specimens of species included in Appendices I, II and III (Article XIV (1)) or restricting or prohibiting trade, transport of species not included in Appendix I, II or III.

These are non-self executing provisions, which means that they can't be implemented until specific domestic legislation has been adopted. In contrast, self-executing provisions are directly applicable by a party without the need for implementing domestic legislation unless expressly provided by domestic legislation. The obligations of the convention cannot be enforced against private persons in the courts and penalties cannot be imposed for non-compliance. Thus, without effective domestic compliance mechanisms, the enforcement of CITES is unattainable. Article VIII(1) says "the parties shall take appropriate measures to enforce the provisions of the present convention and to prohibit trade in specimens in violation thereof. These shall include measures to penalize trade in, or possession of such specimens or both, and to provide for the confiscation or return to the state of export of such specimens."

CITES gives no guidance on the level of penalties that should be imposed a persons convicted of illegal trade or possession. With the

result, there has been considerable variation in punishment. Most CITES nations have failed to impose meaningful sanctions against those engaged in illegal trafficking of wildlife.<sup>9</sup>

### **3.3.1(c) Record Keeping Requirements**

Each party is required to keep a record of all trade in CITES species, compile this information in an annual report and prepare periodic report on its implementation of the convention, including a biennial report on the legislative, regulatory and administrative measures taken to enforce its provisions.<sup>10</sup>

### **3.3.1(d) Compliance and enforcement**

CITES is convinced with the preservation of species rather than habitat. Its annexed appendices included endangered animals and plants which are to be protected. The main aim of CITES is to prohibit international trade in species threatened with extinction mentioned in Appendix (1) but encouraged constructive trade in species whose survival is not threatened, but allowed control trade in species whose survival is not threatened. On other hand, the Appendix II listing leaves the decision on trade control wholly to the discretion of the exporting state. That is, there is no role for the importing state, other than to ensure that an export permit is issued for each specimen (Article IV (4) )

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<sup>9</sup> *Ibid*, p.323.

<sup>10</sup> Article 7 of CITES Convention, 1973

### **3.4 The Convention on the Conservation of Migratory Species of Wild Animals, 1979**

This convention was concluded at Bonn, from 11 to 23 June, 1979, for the purpose of preparing and adopting a convention on the conservation of migratory species of wild animals. It provides a framework for further actions by its parties, to protect migratory species during their trans- boundary migrations and to conserve their habitats. Species are listed on its two appendices according to their level of endangerment or other threats to survival.

The contracting parties to the convention recognizes that the wild animals are an irreplaceable part of the earth's natural system, to be conserved for the welfare of mankind, which are of ever growing value of wild animals from environmental, ecological, genetic, scientific, aesthetic, recreational cultural, educational, social and economic point of view; particularly those species of wild animals that migrate outside or cross national jurisdictional boundaries. Besides, the states must be the protector of the migrating species of wild animals that live within or pass through their national jurisdictional boundaries.<sup>11</sup>

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<sup>11</sup> Dina Mani Pokharel, "*Legal Aspects of Biodiversity*", (Nepal: Udaya Books, 2001)

### 3.5 The Convention on Biological diversity (CBD)

#### BACKGROUND

As developing countries have come to realize the economic value of their biodiversity, so the political considerations surrounding its utilizations have become more complex.<sup>12</sup> The direct and indirect commodity values of biological resources such as tropical hardwoods, fisheries, tourism and aesthetic purposes are well established; only the recognition of the value of bio-diversity as a genetic resource available for commercial exploitation through biotechnology has changed.

Developing countries where most of the genetic resources are located, now started demanding a greater share of the economic benefits arising from the use of resources as well as insisted on sovereign rights over genetic resources within their territories which until now have mainly confined to the industrial countries with the technological capacity to exploit them. They don't accept the idea of common heritage of mankind. They want sufficient protection in terms of exploitation in them.<sup>13</sup>

Developing countries have given the following arguments against the common heritage approach.<sup>14</sup>

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<sup>12</sup> Brian Groombridge (ed.). *Global Biodiversity; Status of the Earth's Living the Sources* (New York: Chapman and Hall, 1992), p. 576.

<sup>13</sup> *Ibid*, p. 576.

<sup>14</sup> A.H. Ansari and Parveen Jamal, "The Convention on Biological Diversity: A critical Appraisal with special reference to Malaysia." *Indian Journal of International Law*, vol.40. 2000, pp. 137-169.

- 1) Western countries which have exploited the rich genetic diversity of developing countries for research and development and have also patented, are not ready to share the benefits of their researches, which are billions of dollars per year.
  
- 2) It is argued by developing countries that taking only a few plants based on the quantity of extraction cannot hurt the country. The loss is in the genetic information which may be taken from the country via only one or two specimens, which may eventually overwhelm a nation in the supply or control of new biological materials. For example, in Nigerian sugar production where genes were taken from raw biological material and grafted into new products that now make traditional sugar crops near redundant. This development could affect up to 15-20 million people in developing countries, who earn their living from sugar production geared for exports. It is further argued that genetic material taken by a developed country from a developing country may be a few cells only, but if it has contributed to valuable, genetic research. The gene donating country which has suffered a loss might bring millions of dollars to the breeder.

At the same time, the developed world has become increasingly apprehensive about the accelerating rate of loss of biodiversity and its global consequences. Developed countries want to see the use of biological resources placed on a sustainable basis, and are linking their overseas development assistance



which often clashes with the sovereign rights of developing countries to manage their resource as they deem best an behalf of their citizens.<sup>15</sup> This clashes is of the perspectives between the developed countries which insisted upon the common ownership of the genetic resources and the private ownership of the outcome of genetic resources and of the developing countries which pleaded for the private ownership of the genetic resources of the country of origin and sharing of the fruits of scientific researches and commercial benefits. In addition, they also stress on the idea that world's natural resources are the common heritage of mankind and claim exploitation of genetic resources of southern countries.

There is a political commitment to share benefits of the research conducted on these resources in countries of the North. But the problem is that the research units are mainly in the private sector and most of the outcomes of the research are patented by the breeders. This problem can be solved at national level by enacting an appropriate legislation to regulate patenting rights and to share the benefits, technological and monetary of the research with the foreign country. At the same time, to advocate institutional property rights is to disregard the problems of the inherent secrecy in this area of market forces and counterproductive nature that patenting can create.<sup>16</sup> Additionally, the private property system of biological material threatens to promote only scientific development where it is profitable as against the ecological

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<sup>15</sup> See Brian Groombridge. n. 12, p. 576.

social or equitable terms. All these considerations led to the negotiations for a Convention on Biological Diversity.

The origin of the convention negotiation goes back to the initial drafts prepared in 1987 by the United Nations Environment Programme (UNEP) in response to a resolution adopted by General Assembly to examine the possibility of negotiating and establishing an international legal regime on the conservation and sustainable use of biodiversity. In view of its catalytic role in environmental affairs, UNEP decided on 17 June 1987 to convene an *ad hoc* Working Group of Experts on Biological Diversity for the harmonization of the existing conventions related to biological diversity. At its very first meeting, the group of experts agreed on the need to elaborate an international binding instrument on biological diversity.<sup>17</sup>

In May 1989, UNEP established an *ad hoc* working group of legal and technical experts on biological diversity to prepare an international legal instrument for the conservation and sustainable use of biological diversity, taking into account “the need to share costs and benefits between developed and developing countries and the ways and means to support innovation by local people.”<sup>18</sup> The *ad hoc* working group, which became in February 1991, the Intergovernmental Negotiating Committee (INC), held seven working sessions which culminated in an agreed text of the convention on biological diversity (CBD).

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<sup>16</sup> Kannakuma S.Raman, “Conservation of Biodiversity”: Need of the Decade” *Social Action*, Vol. 47. Jan-March, 1997

The Convention was opened for signature on 5 June 1992 during the United Nations Conference on Environment and Development (UNCED) held in Rio De Janerio. It entered into force on 29 December1993. The early entry into force of the CBD suggests that the political will that had existed at UNCED has been carried forward into the next phase of implementation and compliance with the conventions provision. Like other treaties, the CBD will be judged to have been successful only if each state fulfills its obligations by translating international law into national legislation, regulations, policies and institutions.

### **3.5.1 Preamble**

The preamble of the CBD recognizes the wide range implications of biodiversity conservation and its ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic value. It affirms that the conservation of biological diversity is “a common concern of the mankind”, that states have “sovereign rights over their own biological resources” and that they are “responsible for conserving their biological diversity and for using their biological resources in a sustainable manner.” It includes a precautionary principle note by declaring that a lack of full scientific certainty should not be a reason for postponing measures to avoid or minimize such a threat of significant reduction or loss of biodiversity. It introduces the idea of the desirability of sharing equably the benefits arising from the use of traditional knowledge, innovations and practices of indigenous peoples relevant to

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<sup>17</sup> See A.H. Ansari and Parveen Jamal. n. 14

conservation and sustainable use of biodiversity. The preamble acknowledges the need for new and additional financial resources and appropriate access to relevant technologies for developing countries.

The convention is the first to incorporate Principle 21 of the Stockholm Declaration into the operational part of its text.<sup>19</sup>

### **3.5.2 The Contents of the Convention**

The Convention on Biological Diversity is the first treaty of its kind to address in a comprehensive manner the continuous rise in plant and animal extinction worldwide. It has three objectives-

- 1) Conservation of biological diversity,
- 2) Sustainable use of its components, and
- 3) Fair and equitable sharing of the benefits arising out of the utilization of the genetic resources.<sup>20</sup>

### **3.5.3 Conservation and Sustainable Use**

The convention includes several commitments of a general nature. All parties must co-operate for the conservation and sustainable use of biodiversity which means the use of components of biological diversity in a way that doesn't lead to the long term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of

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<sup>18</sup> See Brian Grombridge.

<sup>19</sup> Art.3 of CBD, 1992

<sup>20</sup> See R.A. Malviya. n. 7

present and future generations,<sup>21</sup> develop national strategies for conservation and sustainable use,<sup>22</sup> monitor the effects of activities likely to have significant adverse impacts on the conservation and sustainable use of biological diversity.<sup>23</sup>

The convention also includes general obligations on research and training, public education and awareness, exchange of information, and technical and scientific cooperation.<sup>24</sup>

The convention also envisages a range of measures to be included under *ex-situ* and *in-situ* conservation.<sup>25</sup> The convention requires the carrying out of environment impact assessment of proposed projects likely to have significant adverse effects and the ensuring of the minimization of adverse impacts.<sup>26</sup>

#### **3.5.4 Access to Genetic Resources and Transfer of Technology**

The convention includes new international rules on:

- (1) Access to genetic resources,
- (2) Access to and transfer of technology, and
- (3) Handling of biotechnology and distribution of its benefits.

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<sup>21</sup> Art. 5.

<sup>22</sup> Art. 6.

<sup>23</sup> Art. 7

<sup>24</sup> Arts. 12,

<sup>25</sup> Arts. 12,17, and 18. Art 14 provides for exchange of information and notification in cases of grave danger to biodiversity.

These are controversial to the extent that they are perceived by some countries to threaten the stability of the existing intellectual and other property rights. Article 15 of the convention seeks to ensure and facilitate access to genetic resources by parties that are countries of origin to other parties for environmentally sound uses. The authority to determine such access rests with national governments and is subject to national legislation.<sup>27</sup> These provisions are also seen to allow possible claims being made on the financial profits arising from the exploitation and development of resources by companies based in developed country parties.

Article 16 of the convention establishes rules on access for and transfer between parties of technologies including biotechnologies, relevant to the conservation and sustainable use of biodiversity. Under Article 16(2), access and transfer of technology is to be on 'fair and most favourable terms'. Article 16(3) requires the parties to take measures to give those parties which provide genetic resources, particularly developing countries, access to technologies, including technologies protected by patents and other intellectual property rights. Article 16(5) of the convention imposes an obligation on the parties to cooperate in ensuring that intellectual property rights (IPRs) are supportive of and not run counter to the objectives of the convention. It shows that the IPRs will not interfere in transfer of technology.

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<sup>26</sup> Arts. 8(a) to (d) and 9(a) to (c)

<sup>27</sup> Art. 15 (1) to (7)

Additionally, the convention provides for the exchange of information between parties, including exchange of results of technical and scientific cooperation, personnel training and exchange, joint research programmes to promote cooperation.<sup>28</sup>

### **3.5.5 Biotechnology**

The provisions contained in Article (19) about the handling of biotechnology and the distribution of its benefits are the most controversial ones. This is the first attempt by the international community to make international rules on biotechnology at the global level. Each party must provide for effective participation in bio-technology research activities by parties which provide the genetic resources especially the developing countries.<sup>29</sup> Each party must take measures to promote priority areas, especially developing countries, to the benefits arising from bio-technologies based upon genetic resources provided by the contracting parties. Such access shall be on mutually agreed terms.

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The convention does not include detailed rules on genetically modified organisms, including agreement on the safe transfer, handling and use of any living modified organism resulting from biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity.<sup>31</sup>

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<sup>28</sup> Arts. 17 and 18.

<sup>29</sup> Art. 19(1)

<sup>30</sup> Art. 19(2)

<sup>31</sup> See R.A. Malviya. No. 7

### **3.5.6 Financial Resources and Mechanism**

Arts. 20 to 21 provide for the allocation of financial resources and establish a financial mechanism to provide new and additional financial resources to enable developing country parties to meet the incremental costs of implementing the convention.

Donors, are further protected by Article 23 i.e. (Conference of Parties) from being forced into contributions they do not want to make, which ensures that the rules of procedure for conference of parties will be decided by consensus. Article 39 makes the Global Environment Fund (GEF), an interim financial mechanism and the GEF is likely to remain in this role with donor countries firm support.

### **3.5.7 Conference of Parties Under the CBD**

The Conference of Parties (COP), constituted under Article 23, is responsible for implementing the convention. In the COP all parties to the convention are to be represented. However, the UN, its specialized agencies and the International Atomic Energy Agency, as well as any country that is not party to convention, can be represented as observers. NGOs can also be represented, if two thirds of the members have no objection. Till now, six-COP have been held so far to discharge the responsibilities undertaken by CBD. The next seventh-COP will be held in Kaula Lumpur, Malaysia in March 2004.



### **3.5.7 (a) COP-1**

The first meeting of the COP(COP-1) was a formal meeting to appoint the officials of the convention, held in Bahamas from 28 November to 9 December 1994. The COP-1 thus established the organs of internal function.

### **3.5.7 (b) COP-2**

The second COP (COP-2) held in Jakarta, Indonesia in Nov., 1995 generally discussed about transfer of technology and funding of some conservation projects in the developing countries. Despite the desire to resolve the responsibilities undertaken in the COP-1 at the second conference, they have been placed in the “medium term programme” of work for the COP. Even the issue of access to genetic resources, with regard to the farmers rights, the equitable utilization, the implication of the international undertaking on plant genetic resources, and the mobilisation of resources and funding the conservation projects were not satisfactorily resolved in the COP-2. But it adopted decisions needed to make the transition toward implementation.

### **3.5.7 (c) COP-3**

In the COP-3 meeting held in Buenos Aires, Argentina from 4-15, November 1996, the G-77 stressed on both the priority steps necessary to implement the convention and the importance of promoting the fair and adequate sharing of benefits arising out of the use of genetic resources. It also wanted a separate and independent funding mechanism based on

democratic principles, and not on the basis of consensus. Another important issue discussed at length was the proposed protocol on Biosafety. Pending the protocol, the UNEP's International Technical Guidelines for Safety in Biotechnology was enforced. The important decisions taken at the COP-3 are: <sup>32</sup>

- (i) GEF will continue to operate as the interim financial mechanism for the next several years.
- (ii) All funding institutions will make their activities supportive of the convention. The developed country parties were requested to cooperate in the development of standardized information on their financial support.
- (iii) The financial mechanism will function under the authority and guidance of, and be accountable to the COP. The COP will determine the policy, priorities and criteria for access to financial resources.
- (iv) The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) was requested to cooperate with the Convention to Combat Desertification in matters related to biological diversity and drylands.
- (v) The Ramsar Convention was urged to act as a lead partner in the implementation of activities under the CBD related to wetlands.

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<sup>32</sup> UNEP/CBD/COP/3,1996a

### 3.5.7 (d) COP-4

The fourth conference of parties (COP-4) was held in Bratislava, Slovakia, between 4- 15 May 1998. The important decisions are as follows:<sup>33</sup>

- (1) All governments and funding institutions were requested to provide funding for the development and implementation of the clearing house mechanism (CHM).
- (2) The protocol on biosafety to be prepared by a working group was discussed
- (3) For protecting the forest biodiversity, a close cooperation between the CBD, the International Forum on Forests (IFF), the FAO and its Global Forest Resources Assessment (GFRA), and the GEF.
- (4) An *ad-hoc* open-ended inter- sessional working group established to address the implementation of Article 8(i) of CBD along with the interests of the indigenous people on gene movement and profit sharing.
- (5) As measures for implementing the Convention, incentives, public education, awareness, and Environment Impact Assessment (EIA) were considered as effective tools.

### 3.5.7 (e) COP-5

The fifth conference of parties (COP-5) was held in Nairobi, Kenya, from 15-16 May 2000. The important decisions are discussed below.<sup>34</sup>

- (i) It called upon the parties to sign the Cartagena Protocol on Bio-safety and to deposit instruments of ratification, acceptance or accession as soon as possible.
- (ii) It urged the implementation of the work programmes for forest biological diversity by highlighting the importance of supporting work on taxonomic, ecological and socio-economic issues.
- (iii) An adhoc technical expert group on forest biological diversity was established under the provisions of Article 8 (j)
- (iv) States were urged to establish a global taxonomy initiative co-ordination mechanism to assist the Executive Secretary to facilitate international cooperation and coordinate activities under the global taxonomy initiative.
- (v) By recognizing the cross-cutting nature of plant conservation and its important role in existing initiatives particularly the global plan of action for the conservation and sustainable utilization of plant genetic resources for food and agriculture, the cop-5 decided to consider at its sixth meeting to establish a global strategy for plant conservation.

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<sup>33</sup> UNEP/CBD/COP/4, 1998

### **3.5.7(f) COP-6**

The Sixth Conference of Parties (CDP-6) was held in the Hague, Netherlands from 7-19 April, 2002. The important decisions discussed were<sup>35-</sup>

- (i) It urged the Global Environment Facility and other funding institutions to provide financial support for implementation of the programme of work on the biological diversity of inland water ecosystems.
- (ii) The COP-6 received reports from its subsidiary bodies, the executive secretary and other organizations to review the implementation of the programme of work. It also focused on the issues like forest biological diversity, invasive alien species, threatening ecosystems, habitats, access and benefit sharing as related to genetic resources and other strategic plan.
- (iii) It recognized that sustainable tourism, including tourism based on the natural environment (economic tourism) is a vital growing segment of the tourism industry.
- (iv) It recommended parties to the CBD and other governments to consider the ratification on International Plant Protection

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<sup>34</sup> UNEP/CBD/COP/5,2000

<sup>35</sup> UNEP/CBD/COP/6.2002

Convention and called on relevant organizations to actively work for its implementation.

- (v) The COP-6 also urges parties and other regional organizations and networks to cooperate actively to support the development and implementation of invasive alien species strategies and action plans, and to develop national strategies.

### **Conclusion**

It can be said that all these six COPs has been successful in only sorting out the issues relating to conservation of the biological diversity. Human beings dependency on plant bio-diversity and the bio-diversity of the marine life (sea food, timber and genetically modified food products) has been increasing. In the near future, they are going to cover 60 to 70 percent of the food demand and global economy. In view of this, the formulation of the CBD and other legal instruments, international and national legislation, become very pertinent. Among all these, the CBD is the most important legal instrument which provides an umbrella to other legal and extra legal activities, global, regional and within a nation.

But, the convention fails to include a global list of species important for conservation and sustainable use. Its relationship to other global instruments, including in particular CITES, as well as other regional instruments remain unclear. These are certain areas pertaining transfer of technology and benefit sharing, which demand immediate solution are being delayed in implementation.

Inspite of all these, the conservation of the bio-diversity of the world has been made a priority among the environmental issues. If it is not conserved with joint and concerted efforts of the world community, a time will come when the loss of the bio-diversity would be irreparable and it will leave a chain of environmental sufferance around the world.

## **CHAPTER IV**

### **INDIA'S RESPONSE TO BIO-DIVERSITY CONSERVATION**

India, which is one of the 12 mega-diversity centers of the world, has ratified the Convention on Biological Diversity (CBD) in February, 1994. At the national level, it has adopted the Biological Diversity Act, 2002 and other related protection on plant varieties. It has been an active participant in enforcing the sustainability principles contained in the Agenda 21 of United Nations Conference on Environment and Development (UNCED). For the cause of biodiversity conservation in compliance with the requirements of the Convention on Biological Diversity, the National Biodiversity Strategy and Action Plan (NBSAP) with funding support from the Global Environment Facility (GEF) is now underway. On the other hand, the Biological Diversity Bill which became an Act, in 2002 is an important mechanism for regulating access to biological resources and in establishing benefit-sharing arrangements. The Act also reflects the Government's strong reaction to biopiracy or the illegal appropriation of resources or knowledge, imposition of terms and conditions to secure equitable sharing of benefits and approval for seeking any form of Intellectual Property Rights (IPRs) in or outside India for an invention based on research or information pertaining to a biological resource obtained from India. This Chapter is all about the steps as well as initiatives taken by the Government of India by adopting its own legislation for the conservation of biological resources in response to the Convention on Biological Diversity (CBD). Article 8(j) of CBD states,



each country which is a party to the Convention shall as far as possible and as appropriate:

*Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous knowledge and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovation and practices.*

Keeping in mind this provision, the chapter also discusses the provisions contained in India's Biological Diversity set in relation to CBD and how far the Act is in Conformity to the Convention on Biological Diversity. The legislation has focussed on matters relating to property rights, benefit sharing, access and sovereignty and protection of plant varieties etc.

#### **4.1 Objectives of the India's Biological Diversity Act.**

The objectives of the Act, to be pursued in accordance with the Convention on Biological Diversity, are the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources, and also to give effect to the United Nations Convention on Biological Diversity.

## 4.2 Definitions

Like the Article (2) of the Convention on Biological Diversity, the India's Biological Diversity Act defined the following terms as:<sup>1-</sup>

1. "biological diversity" means the variability among organisms from all sources and the ecological complexes of which they are part, and includes diversity within species or between species and eco-systems.
2. "biological resources" means plants, animals and micro-organisms or parts thereof, their genetic material and by-products with actual or potential use or value, but does not include human genetic material.
3. "benefit claimers" means the conservers of biological resources, their by-products, creators and holders of knowledge and information relating to the use of such biological resources, innovations and practices associated with such use and application,
4. "bio-survey and bio-utilisation" means survey or collection or species, subspecies, genes, components and extracts of biological resource for any purpose and includes characterization, inventorisation, and bioassay,
5. "sustainable use" means the use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of the biological diversity thereby maintaining its potential to meet the needs and aspirations of present and future generations,

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<sup>1</sup> Full Text of the Biological Diversity Act, 2002, "*Ministry of Law and Justice*," Government of India.

6. "value added products" means Products which may contain positions or extracts of plants and animals in unrecognisable and physically inseparable form.

### **4.3 Regulation of Access to Biological Diversity**

The India's Biological Diversity Act mentioned in Chapter –II about the regulation of access to biological diversity. Article (3) of this Act states that “any person who is not a citizen of India, a non-resident Indian and a body corporate, association or organization who is not registered in India, shall not transfer any biological resource occurring in India for monetary consideration or knowledge associated thereto for research or for commercial utilization or for bio-survey and bio-utilisation without the previous approval of the National Biodiversity Authority”<sup>2</sup>

Here the term “transfer” does not include publication of research or dissemination of knowledge in any workshop or seminar. But it shall be applied to collaborative research projects involving transfer or exchange or biological resources or information relating thereto between institution, including Government sponsored institutions of India; and such institutions in other countries, if such projects satisfy the conditions specified above. All collaborative research projects shall conform to the policy guidelines issued by the Central Government and be approved by the Central Government.

### **4.4 Concerns Relating to Intellectual Property Rights**

Today the debate about intellectual property runs alongside that of biodiversity conservation. The loss of biodiversity at the international level was felt in the late 1980s. To address this issue, UNEP Governing

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<sup>2</sup> See, n. 1. Article (3)

Council set up an *ad hoc* working group which brought forward the issue of conservation of plant genetic resources. Till then plant genetic resources had been regarded in international law as the “common heritage of mankind,” by allowing these resources to be freely available to large companies in the industrialised countries who could use them as basic raw material to create new commercial seeds, drugs etc. This is an undesirable situation as far as the developing world is concerned. The newly developed seeds or medicines developed by these large companies are accessible only through the market based on appropriation of large profits through IPRs.<sup>3</sup> In the 1980s the developing countries did attempt at changing the system through FAO International Undertaking on Plant Genetic Resources. However, this did not find favor with countries such as US, UK, Germany, France and Japan.

The North-South divide on the issue is apparent which surfaces again in the negotiations on the Convention on Biological Diversity (CBD). The CBD merely assumes that IPRS in the context of biological resources are necessary not mandatorily.

Under the CBD, it has been premised that the country in which the genetic resources are found will have the “sovereign rights” over them. Such concept of sovereignty has two levels: *first* at the level of the State vis-à-vis other states and *second* at the level of the people that constitute that state. It is at the latter level that true sovereignty lies. CBD, in its

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<sup>3</sup> Vandana Shiva and Shalini Bhutani, 1998. *Intellectual Property Rights and Patents* (RFSTE. New Delhi). p14.

preamble, begins with the recognition of the sovereign rights of states as well as local communities desirability to share the benefits of the use of biological resources with them.

At the level of the state, the sovereignty concept is not absolute. It is subject to the general duty not to harm the interest of other states. The Stockholm Declaration, Principle 21, which is re-emphasised in the Rio Declaration, Principle 2, lays down that states have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction.<sup>4</sup>

At the level of the people, having acknowledged that the sovereignty lies with the people, it is for the national government to ensure that the people can exercise their sovereign rights over their biological resources. Only the national government can decide what is important for its own people and not those of the MNCs. Thus, sovereignty enables states to take independent decisions about things that affect everyday life.<sup>5</sup> It is here that the Govt. of India adopted its own legislation for biodiversity conservation. The extension of the issues on IPRS and extension of patents to living organisms has serious ramifications also.

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<sup>4</sup> *ibid* p. 16

The Indian Biodiversity Act generally focuses on the rights of the state and monopoly intellectual property rights such as patents. The Act in its Article (6) mentions that no person shall apply for any intellectual property right, by whatever name called, in or outside India for any invention based on any research or information on a biological resource obtained from India without obtaining the previous approval of the NBA. Further, the Act does not give current rights holders, such as individual farmers or local communities, the capacity to defend their rights in the same way that it seeks to equip the state to fight “Biopiracy.” This problem is reflected in several ways. First, where benefit-sharing is allocated in the form of money, the National Biodiversity Authority (NBA) has the power to determine whether the money should be paid directly to benefit-claimers or used generally for biodiversity management activities.<sup>6</sup> Thus, even identified benefit claimers do not have a right to the money that is paid by the entity using their resources or knowledge. Second, where the Authority chooses to grant property rights to local innovators, they do not have a right to the allocation but are dependent on the Authority’s goodwill.

On the whole, the Biodiversity Act provides a property rights framework which seeks to be very firm on the question of access from outsiders. The National Biodiversity Authority while granting approval of a patent, may impose benefit sharing fee or royalty or conditions

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<sup>5</sup> Arjun Singh and others, “Trade –Related Intellectual property Rights. Biotechnology, Biodiversity and Indian Agriculture,” *Indian Journal of Agriculture Economics*, vol 54 (3) July –Sept, 1999, p. 380.

<sup>6</sup> K. Ravi, Srinivas, “Bi-diversity Bill: Nice words, No vision”, *Economics and Political Weekly*, Nov 4. 2000. vol. 35 p. 1635

including the sharing of financial benefits arising out of the commercial utilization of such rights. But it shall not apply to any person making an application for any right under any law relating to protection of plant varieties enacted by Parliament.

However, if the introduction of intellectual property rights has been strongly encouraged concerning the products of research based on biological resources, there has been a significant resistance in the research and business communities to giving property rights on biological resources and knowledge used as the basis for research in laboratories.<sup>7</sup>

The consequence is that farmers, local communities and other managers of biodiversity are not given intellectual property rights to their knowledge. In exchange, the concept of benefit-sharing has been introduced in a bid to recognise the contribution of these acts while usually denying them property rights.<sup>8</sup>

#### **4.5 Benefit – Sharing**

Before obtaining any biological resource for commercial utilisation or bio survey purposes, prior intimation to State Biodiversity Board is required for a person who is not a citizen of India or a body corporate, association or organization which is registered in India, but this provision shall not apply to the local people and communities of the area, including

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<sup>7</sup> “Biodiversity Bill insists on Sovereign Rights-Bills an intellectual property Rights-III”, *The Hindu*, 8 March, 2001

<sup>8</sup> Article (7) of the India’s Biological Diversity, 2002



growers and cultivators of biodiversity, and *vaids* and *hakims*, who have been practicing indigenous medicine.<sup>9</sup>

While referring to Article (19) of the Convention of Biological Diversity regarding the distribution of benefits arising from biotechnologies based upon genetic resources provided by those Contracting Parties, the Indian Biological Diversity Act in its Article (21) states:-

- i. The National Bio-diversity Authority shall grant approvals regarding the equitable sharing of benefits arising out of the use of accessed biological resources, their by products, innovations and practices associated with their use and applications and knowledge relating thereto in accordance with mutually agreed terms and conditions between the person applying for such approval, real bodies concerned and the benefit claimers.
- ii. In relation to other regulations, the National Biodiversity Authority shall determine the benefit sharing which shall be given effect in all or any of the following manner, namely:<sup>10</sup>
  - a) by granting of joint ownership of intellectual property rights to the National Biodiversity Authority, or such benefit claimers as identified,

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<sup>9</sup>Sec. n. 1.

<sup>10</sup> Ibid,

- b) by transfer of technology, location of production, research and development units, in area which will facilitate better living standards to the benefit claimers,
- c) by association of Indian scientists, benefit claimers and the local people with research and development in biological resources and bio-survey and bio-utilisation,
- d) by setting up of venture capital fund for aiding the cause of benefit claimers.

It further states that where any amount of money is ordered by way of benefit sharing, the National Biodiversity Authority may direct the amount to be deposited in the National Biodiversity Fund.

Other forms of benefit-sharing include technology transfers, association of benefit claimers with research and development or the location of production, research and development units in area where this will facilitate better living standards to the benefit claimers.

#### **4.6 Access Within India**

The main focus of the Act while accessing biological resources is to concentrate power in the hands of the government. Indeed, Indian citizens and legal persons need to give prior intimation of their intention to obtain biological resources to the State Biodiversity Boards, before applying for intellectual property rights, The impacts of this clause are however, likely to be limited since patent applications are covered by a

separate clause. Further, the Authority has no extra-territorial authority and cannot monitor applications for intellectual property rights outside of India.

#### **4.7 Incentive Measures.**

Under the Convention on Biological Diversity, Article (11) states that each Contracting Party shall as far as possible, and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of the components of biological diversity.

In the same manner, Article (19) of India's Biological Diversity Act mentions that "any person who intends to obtain any biological resource occurring in India or knowledge associated therewith for research or for commercial utilisation of any research relating to biological resources occurring in India, shall apply for the approval from National Biodiversity Authority as such. Further, any person who intends to apply for a patent or any other form of intellectual property protection whether in India or outside India may make an application according to the rules of National Biodiversity Authority. On receipt of such an application, the National Biodiversity Authority may grant approval subject to any regulations made in this behalf as it may deem fit, including the imposition of charges by way of royalty or for any reasons to be recorded in writing.

#### **4.8 Transfer of Biological Resource or Knowledge**

No Person who has been granted approval under Article (19) shall transfer any biological resource or knowledge associated thereto without the permission of the National Biodiversity Authority. It shall also give public notice of every approval granted by it.

#### **4.9 Other Insitutional Mechanisms.**

India's Biological Diversity Act also gave the proposal to set up a State Biodiversity Board under the National Biodiversity Authority. The Board shall be a body corporate by the name aforesaid, having perpetual succession and a common seal, with power to acquire, hold and dispose of property, both movable and immovable, and to contract, and shall by the said name sue and he sued. The Board shall consist of a Chairperson who shall be an eminent person having adequate knowledge and experience in the conservation and sustainable use of biological diversity, and not more than five ex-offices members to be appointed by the State Government to represent the concerned Departments of the State Government. It has to appoint not more than five members from amongst experts in matters relating to conservation of biological diversity, sustainable use of biological resources and equitable sharing of benefits arising out of the use of biological resources.

The function of the State Biodiversity Board shall be to-

- (a) advise the State Government, subject to any guidelines issued by the Central Government, on matters relating to the conservation of biodiversity, sustainable use of its components and equitable sharing

of the benefits arising out of the utilisation of biological resources.  
and

(b) regulate by granting of approvals for commercial utilisation and bio-utilisation of any biological resource by Indians.

#### **4.9.1 Duties of the Central and the State Governments**

Article 36 of the India's Biological Diversity Act lays down the following procedures to be followed by the Central and State Governments to develop national strategies plans for conservation of biological diversity.

1. The Central Government shall develop national strategies, plans, programmes for the conservation and sustainable use of biological diversity including measures for identification and monitoring of areas rich in biological resources, promotion of *in situ*, and *ex-situ*, conservation of biological resources, incentives for research, training and public education to increase awareness with respect to biodiversity.

2. The Central Government shall, as far as practicable, integrate the conservation, promotion and sustainable use of biological diversity into relevant Cross-Sectoral plans, programmes and policies.

3. The State Government, in consultation with the Central Government, may frame rules for the management and conservation of all the heritage sites.

4. The State Government shall frame schemes for compensating or rehabilitating any person or section of people economically affected by such notification.

#### **4.9.2 Biodiversity Management Committees.**

Article (41) of India's Biological Diversity Act has constituted a Biodiversity Management Committee for every local body for the purpose of promoting conservation, sustainable use and documentation of biological diversity including preservation of habitats, conservation of land races, folk varieties, domesticated stocks and breeds of animals and microorganisms and chronicling of knowledge relating to biological diversity.

In addition, the National Biodiversity Authority and the State Biodiversity Boards shall consult the Biodiversity Management Committees while taking any decision relating to the use of biological resources and knowledge associated with such resources occurring within the territorial jurisdiction of the Biodiversity Management Committee.

#### **4.9.3 Biodiversity Heritage Sites**

The State Government may, from time in consultation with the local bodies, notify areas of biodiversity importance as biodiversity heritage

sites. It, in consultation with the Central Government may frame rules for the management and conservation of all the heritage sites.

#### **4.9.4 Precautionary Measures.**

The Central Government in consultation with the concerned State Government, may from time to time notify any species which is on the verge of extinction or likely to become extinct in the near future as a threatened species and regulate collection thereof for any purpose and take appropriate steps to rehabilitate and preserve those species.

#### **4.9.5 Designation of Repositories**

The Central Government may designate institutions as repositories under this Act for different categories of biological resources. The repositories shall keep in safe custody the biological material including voucher specimens deposited with them.

#### **4.10 Financial Mechanisms**

For proper utilisation of this Act, the Central Government shall constitute a Fund to be called the National Biodiversity Fund. The Fund shall be applied for-

- a. channeling benefits to the benefit claimers,
- b. conservation and promotion of biological resources and development of areas from where such resources or knowledge has been assessed, and

- c. socio-economic development of areas in consultation with the local bodies concerned.

#### **4.10.1 State Biodiversity Fund**

The State Government in consultation with the State Legislature, shall constitute a Fund to be called the State Biodiversity Fund. It shall be applied for-

- a. the management and conservation of heritage sites,
- b. conservation and promotion of biological resources,
- c. compensating or rehabilitating those section of the people which have been affected due to development of protected areas,
- d. meeting all the expenses incurred for the purposes authorised by this Act.

#### **4.10.2 Local Biodiversity Fund**

The grants allotted to the Local Biodiversity Fund shall be used for conservation and promotion of biodiversity in the areas falling within the jurisdiction of the concerned local body and for the benefit of the community consistent with conservation of biodiversity.



#### **4.11 INDIA'S OBLIGATIONS ON BIODIVERSITY, AND PATENTS ACTS UNDER THE TRIPS AND BIODIVERSITY CONVENTION:**

India, as a member of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) of the World Trade Organization and the Biodiversity Convention, has adopted the Protection of Plant Varieties and Farmer's Rights Act and the Patents (Second Amendment) Bill in response to the obligations under the TRIPS agreement. All these are attempts to define property rights over biological resources and property rights over knowledge or inventions related to biodiversity (intellectual property rights).

##### **4.11.1. PATENTS ON PLANTS:-**

WTO in its TRIPS Article 27.3 (b) requires that all its member countries to provide for protection of intellectual property over plant varieties. As per the text of TRIPS, this protection may be provided by the patent law of a country or by an effective alternative property rights system (*sui generis* system). With this option, it is left to the individual implementing members to design their own system for the protection of plant varieties in their country keeping in view of their specific socio-economic conditions.<sup>11</sup> But, there are some exceptions provided for in the system of TRIPS which states that:

Members may exclude from patentability:

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<sup>11</sup> *ibid.* p. 16

- a. diagnostic, therapeutic and surgical methods for the treatment of humans and animals;
- b. plants and animals other than micro organisms and essentially biological processes for the production of plants and animals other than non-biological and micro-biological processes.

In effect, patent's provide incentives for the development of the private sector in areas where free market principles do not offer sufficient incentives for the development of the industry. TRIPS provides that patents should generally be available in all fields of technology.<sup>12</sup>

Patents on biodiversity imply that corporations who own patents get exclusive rights to the production and distribution of seeds, livestock and medicine. This establishes monopolies on food and health, makes it illegal for farmers to save and exchange seed, and prevents decentralized, pluralistic economics for the production of food and medicine. It also encourages "biopiracy" or theft of our indigenous knowledge.<sup>13</sup>

#### **4.11.2. Conflicts Between WTO/ TRIPS and CBD.**

There are some difference between TRIPS and CBD on the issue of ownership, indigenous knowledge, access, benefit-sharing and public interest. They are<sup>14</sup>

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<sup>12</sup> *ibid* p. 17

<sup>13</sup> Vandana Shiva and Shalini Bhutani, Urvashi Prasad and Afsar H. Jafri, (1999), *An Activists Handhbook on Biodiversity* (RFSTE; New Delhi)P. 26

<sup>14</sup> *ibid* p. 16

1. In ownership issue, TRIPS treated biological resources as intellectual property that is privately owned, which CBD treated them as communities and countries rights.
2. In indigenous knowledge, TRIPS gave the patent holders the power to exclude all others from making or selling biological products derived from biological system. While CBD in its Article 8 (j) requires protection of indigenous knowledge and lifestyles. IPR systems have to meet the objectives of biodiversity conservation.
3. On access, there is no provision for seeking prior consent from governments or communities as genes, cells, plants, animals can be traded freely in TRIPS. But, in CBD access to biological resources requires the prior consent of the country of origin and involvement of local communities.
4. In benefit-sharing, companies claiming patents on biological resources and their products have no obligation to share benefits with the country or community that are the source of the biodiversity in TRIPS. While, in CBD, commercialisation can only be carried out after mutually agreed benefit sharing arrangements are in place.
5. Lastly, in the issue of public interest, TRIPS states that steps to protect biodiversity and public health should not interfere in free trade as WTO rules trade. But, in CBD activities and

organisms such as genetically modified organisms that can have adverse impact on biodiversity and public health should be regulated and if necessary prohibited.

The Indian Government, being a party to the CBD, enacted the India's Biological Diversity Act, 2002 where the above issues are also mentioned. On the issue of access to biological resources occurring in India or knowledge associated there to for research or for commercial utilisation, previous approval from the National Biodiversity Authority is required. Even in the application of any intellectual property right, in or outside India for any invention based on any research on a biological resource obtained from India, prior consent from the National Biodiversity Authority is required. Whatever related provisions included in India's Biological Diversity Act, are totally in conformity to the provisions mentioned in the CBD. Any matters related to ownership, benefit sharing are to be totally brought under the sole authority of the National Biodiversity Authority, which is the only regulator for resources available in India.

#### **4.12 People's Movements**

The Indian Biodiversity Act, 2002 has also provided the protection of knowledge of local people relating to biodiversity through measures such as registration of such knowledge, and development of a *sui generis* system. People's contribution to the development of an adequate *sui*

*generis* system for plants needs to focus on three imperatives which are ecology, recognition of creativity by communities, and economic equity.

In relation to this, the People's Commission on Biodiversity, Indigenous knowledge and People's Rights launched by the Research Foundation, is to inquire into the piracy of India's rich biodiversity so as to assist the people and the government to preserve it. Any endeavor to privatise the common knowledge of tribal and rural resources have to acknowledge their dependency. Thus the process of relocating control over knowledge and biodiversity from the global to the local from the MNCs to the people mandates the strengthening of people's rule.<sup>15</sup> For example, a small community in South Kerala, known as Pattuvam Panchayat, has declared their local biodiversity as community owned resource which they will collectively protect and that no individual, TNC, state or central government can use their biodiversity without their consent. The Panchayat has setup biodiversity registers to record all the species in their region. Even the Gram Sabha, the village community, can decide the legitimacy of patents, not the WTO for biodiversity management. It can also settle disputes between corporations and the people. Therefore, it is envisaged as the complete authority on IPRs.

The most important functions of the Gram Sabha in the context of the fight against western-styled IPR regimes is to keep alive the knowledge of biological resources. India's traditional innovations and practices are of great importance in the conservation of these resources.

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<sup>15</sup> See, Vandana Shiva, n. 3. P. 27

Therefore documentation of people's knowledge about biological resources through Community Biodiversity Registers (CBRs) can be a tool for:-

- ◆ Keeping alive biodiversity knowledge in the country
- ◆ Making people aware of their rights
- ◆ Challenging biopiracy and resisting patents that erode people's right to seed, food and medicines. CBR also provides a means to assert rightful sovereign control over what is their own and better equips the village community with bargaining power. The CBR is an instrument for building self-rule in the management of biodiversity.<sup>16</sup>

#### **4.12.National Biodiversity and Strategy Action Plan (NBSAP)**

In a major advancement for the cause of biodiversity conservation in the country and in compliance with requirements of the Convention on Biological Diversity, the drafting of the country's National Biodiversity Strategy and Action Plan (NBSAP) with funding support from the Global Environment Facility (GEF) is now underway. The strategy and action plan are very broad in scope and comprehensive in coverage and proposes to prepare detailed action plans at sub-state, state, regional and national levels based on the Framework Policy and Action Strategy on Biodiversity (Agenda 21: An Assessment, MoEF, 2002).

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<sup>16</sup> See, Vandana Shiva, n. 3. p. 34.

NBSAP is India's biggest planning and development process aimed at conservation and sustainable use of biological diversity. Under this, about 20 local micro-planning processes at village to district level, 33 state and union territory level processes, 10 planning exercises at ecological regions cutting across states, are engaged in collecting a variety of area specific information and perspectives. In addition, national working groups are preparing action plans on 14 themes.<sup>17</sup>

The whole process is participatory by incorporating a variety of strategies for its development such as workshops and public meetings, consultations, expert inputs etc. An arrangement between a private company, Biotech Consortium Indian Ltd. (BCIL) and NGO Kalpavriksh has been worked out for the implementation of NBSAP projects. In this, Kalpavriksh is the coordinator of a Technical and Policy Core Group (TPCG) which is responsible for technical execution of the project, while BCIL acts as the coordinating agency to deal with administrative financial and logistic arrangements.<sup>18</sup>

Thus, the success or failure of biodiversity conservation projects will in large measure depend upon the ways in which local people are brought into the protected area management process. No amount of additional funding for protected area management will have a positive effect if local peoples and communities are not convinced, trained and empowered to be the key actors in biodiversity conservation.

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<sup>17</sup> Agenda 21: An Assessment. *Ministry of Environment and Forests*, (2002), Chapter 10. P- 199

<sup>18</sup> Ibid. p-200.

## **Conclusion**

The Indian Biological Diversity Act, 2002 which has got President's assent on 5<sup>th</sup> February, 2003 provided for the conservation of biological diversity, sustainable use of its components and fair and equitable sharing of the benefits arising out of the use of biological resources. It came into effect according to the provisions of the Convention on Biological Diversity, to which India is a party. Chapter-II on regulation of biological diversity which was brought under National Biological Authority is totally undemocratic as it amounts to government and bureaucratic control over knowledge. Much of the knowledge of biodiversity and its custodian is in public domain and individuals, and other organisations who acquire knowledge by research, experimentation and observation, and not by any governmental organs. Hence, this knowledge cannot be brought under the preview of National Biological Authority.

In such a scenario, the most reassuring feature will be the virtual set up of non-governmental organisations, grass roots movements, and other groups and individuals who are attempting to redefine democracy and justice from an ecological perspective. For conservation and sustainable use of biological resources, we need to develop policies and frameworks that enable us to derive the best from bio-resources, without diminishing the long-term sustainability.



## **CONCLUSION**

The world's biological riches are unevenly distributed across the continents, and this distribution coincides with the same areas where many of our most ancient and diverse cultures developed. These areas of high biological diversity now face threats from the activities of growing native populations and from the demands that originate in distant developed countries. On the other hand, they are being lost due to large scale clearing and burning of forests, excessive harvesting of plants and animals, indiscriminate use of pesticides, draining and filling of Wetlands, air pollution and the extraction of wildlands to agricultural and human demand for commodities, such as tropical hardwoods, wildlife, fiber and agricultural products; settlement policies that promote the migration of the growing unemployed labour forces to frontier zones; debt burdens that force governments to encourage the production of commodities that can earn foreign exchange; and inappropriate land tenure arrangements that discourage rural people from investing in sustainable agricultural practices.

The term bio-diversity refers to all life forms, with their manifold varieties that occur on earth. It encompasses three types of diversity- genetic, species and ecosystem. It is very essential for the normal functioning of ecosystems and the biosphere as a whole. Knowledge of bio-diversity is also very important for evaluating the impact of global climate change. The conservation of biological diversity and its sustainable and equitable utilisation are essential not only to support the

functioning of ecosystems and human economies but also to ensure the continuing process of evolution. Species extinction is the most fundamental and irreversible manifestation of bio-diversity loss. At global level, it is estimated that there are about 13-14 million species (UNEP, 1995). Of these, 50,000 are currently threatened with extinction and only 3000 economic plant species have been in use on global, national and regional basis.

Realising the value of bio-diversity in recent times, efforts have been made internationally and nationally for the conservation of biodiversity. One of the effective methods for conservation of bio-diversity is law in action. This study is an attempt to realise the importance of biodiversity conservation in rich biological resource countries and adopt measures to conserve them International community has made sincere efforts for the development of legal framework for the conservation of biodiversity. The adoption of the Conservation on Biological Diversity (CBD) during the Rio Summit is considered as a remarkable achievement as this Convention provides the first international legally binding framework for the conservation and sustainable use of biodiversity worldwide. The Convention also made an obligation among the parties to enact its own legislation to preserve the biological resources.

As the discussion in the first chapter indicates, the linkage between the conservation of biological diversity and sustainable development, it is very important to conserve them for the environmental health of our planet and the source of economic, ecological, agricultural

and other utilisation needs for future generations. Biodiversity is the means of livelihood for the poor and their source of basic needs for nutrition and health care. Therefore, its conservation should not be taken for granted.

The discussion in the third chapter relates to the international approaches to biodiversity conservation. These approaches provide a forum for the developed and developing countries to discuss on issues relating to bio-diversity and other endangered species. Bio-diversity is fundamental to human life and it is a basic feature in which living organisms are structured. For the first time, the Declaration at the Stockholm Conference in 1972 highlighted the universal basic legal principles relating to the conservation of biological diversity. After this, international community has realised the necessity of making specific conventions for the protection of particular species and the conservation of the genetic variability of the earth. In this regard, Ramsar Convention, 1974; world Heritage Convention, 1972; CITES, 1973; Convention n Migratory species, 1979 and world chapter for Nature, 1982 are important

Ramsar Convention is an important international environmental law which provides a framework for international cooperation in the conservation of wetland habitats. It sets a precedent in international environmental law as one of the first legal instruments of international wildlife law. Likewise, the World Heritage Convention realises that cultural and natural heritage are increasingly threatened not only by the

traditional causes of decay, but also by changing social and economic conditions. The Convention also explicitly specifies the cultural and natural heritage, which should be protected and conserved.

Another important international legal instrument is CITES which primarily provides legal provisions for the protection of certain species of wild fauna and flora against over exploitation through international trade. The main goal of the Convention is to control, reduce or eliminate international trade in species whose number or condition suggests that their further removal from their natural habitat threaten species survival. Similarly, the Convention on the Conservation of Migratory Species of Wild Animals aims for the Conservation of migratory species of wild animals.

The global conservation treaties were adopted at different times for different purposes. Neither of them, in fact, covered the full range of biological diversity. To protect biodiversity, the international community adopted the Convention on Biological Diversity (CBD) in 1992 which in the first global agreement to address all aspects of biodiversity-genetic, species and eco-system diversity. It provides an international legally binding framework for the conservation and sustainable use of biodiversity worldwide. It represents a dramatic step towards the conservation of biological diversity, the sustainable use of its components, and a fair and equitable sharing of benefits arising from the use of genetic resources. It recognises that genetic resources for food and agriculture warrant discrete strategies and action within the wider

context of plant genetic resources in general. Another important aspect of the convention is that it recognises the sovereign right of states over their biological resources and puts obligation to the state party to ensure that the activities within their jurisdiction and control do not cause damage to the environment of other states.

The Conference of the Parties to the CBD continues to debate important issues such as access to genetic resources, intellectual property rights, indigenous knowledge, and bio-safety. The Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) was established under the Convention on Biological Diversity, to provide the Conference of the parties, and as appropriate, its other subsidiary bodies with timely advice relating to the implementation of this convention. The programme of work of SBSTTA emanates from Article 25 and the cumulative decisions of each meeting of COP which set out, inter alia, the topics on which advice is required for implementing the Convention. So far six COP meetings have been held but its effectiveness has been hampered by the following factors:-

1. The effectiveness of the meeting of the COP;
2. coordination of the internal institutional bodies of the process; and
3. coordination of the external parts of the systems.

For most developing countries, a key reason for joining the CBD was the promise of new and additional funding as promised in Article 20. While the GEF has been established as the interim funding mechanism, the

funds made available to date are widely considered to be inadequate, and the procedures to access the available funding are long and frustrating. As a result, the GEF has given considerable attention to supporting national efforts to prepare the national biodiversity strategies and action plans, as a basis for specifying the requirements.

Participation of developing countries at COPs and other CBD meetings is limited as there is a reluctance to increase the Working Groups at the meeting of the COP. Much support is needed to ensure that developing countries are adequately represented in the negotiation of international instruments and that their representatives are trained and fully informed. Capacity building is widely accepted as a priority by the development assistance community. However, lack of progress in identifying specifically what capacity is required to address the CBD at both institutional and personal levels, also led to slow implementation of COP decisions. The international legal instruments adopted in Rio have confirmed and strengthened the bargains between countries at different levels of development, which again turned the issue of capacity building into more of an obligation. If such provisions are implemented effectively, there is every reason for optimism that the capacity of developing country parties as partners in international environmental conservation will have been greatly improved. Therefore, the ultimate challenge will be to take the leap from making verbal commitments to environmental goals to implementing those ideas.

This chapter has also highlighted the divergence of opinions between the North and South in bearing more responsibility in the conservation of biological diversity and the environment in general. If the UNCED process and CBD is to bear fruits, the North-South dialogue will have to concentrate more on activity and less on acrimony. For any serious efforts of environmental protection, the cooperation and resolution of North and South is very important.

Lastly, the Convention on Biological Diversity has established most of the elements required to be operational. Attention within the process is now moving towards implementation. The Convention is important, as it is global, and adopts an ecosystem approach. Further, it introduces the linkage between conservation and availability of financial resources which marks a significant development for the protection of bio-diversity but this makes the Convention remarkably a weak document as the developing countries have to depend upon the effective implementation by the developed countries. There is also no mechanism in place for systematically tracking implementation of the decisions taken by the Contracting Parties, particularly those that call on actions to be taken by them. The lack of consistent and systematically arranged information on implementation of the Convention makes accurate assessment of progress difficult. This also affects the ability of the COP and the secretariat to prioritise future action.

The second and fourth chapter which discusses about the measures as well as the steps taken by the Government of India to protect biodiversity

rich areas in conformity with the Convention on Biological Diversity. India one of the twelve mega-diversity centers of the World, is the homeland of thousands of species of flowering plants of biodiversity and is therefore, required to conserve biological resources for the maintenance and its sustainable uses. It has adopted many legislative measures like the Indian Forest Act, 1927; Worldlife (Protection) Act, 1972; Forest (Conservation) Act, 1980; and Environment (Protection) Act, 1986. Other policy initiatives included National wildlife Action Plan, 1983 (updated in 2002); Joint Forest Management Guidelines, 1990; Environmental Action Programme, 1993; and National Bio-Diversity Strategy and Action Plan which is now underway. India has also set up many *ex situ* and *in situ* conservation programmes.

The Indian Biological Diversity Act, 2002 which was adopted in conformity to the Convention on Biological Diversity is also a step forward taken by developing countries to conserve their rich biological resources. The Act also defined the biological diversity as the variability among living organisms from all sources and the ecological complexes of which they are part, and includes diversity within species or between species and of eco-systems. It entrusts full responsibility of the control of biological resources to the National Biological Authority and State Biodiversity Boards. The NBA is the sole regulator and distributor of gains arising out of the benefit sharing of resources and communities cannot claim their rights over this.



In spite of all these measures, the Act has certain flaws as it did not include marine resources for which India has a long coastline and an exclusive economic zone. Civil society has not been given adequate representation in the National Biodiversity Authority. Local people and communities' role is totally absent in the Act. The basic problem with the Act is that it is based on a framework in which the government acts as a monopoly power, the sole regulator and benefactor. But, the conservation and sustainable use of bio-diversity demands that we need to be sensitive in regulation and incentive mechanisms for research. For sustainable use, we need to develop policies and frameworks that enable us to derive the best from bio-resources without diminishing the long-term sustainability of the resource base.

Above all, as the developing countries have come to realise the economic value of their bio-diversity and ready to share their resources by providing some protection in terms of exploitation from the developed world, there has been improvement in negotiations on resource sharing. On the other hand, the developed world which has become more apprehensive about the accelerating rate of loss of bio-diversity and its global consequences, want to see the use of biological resources placed on a sustainable basis. They have also started linking this to their overseas development assistance programmes. As a result of this, both developed and developing world have come together by enacting the Convention on Biological Diversity under the UNCED where the problem was solved by agreeing to adopt appropriate laws in each country of

origin. They also held seven Intergovernmental Negotiating Committees before the final draft of CBD. This supports the first hypothesis which suggests that the various provisions negotiated under the CBD was the result of some compromise. However one major industrialize country, viz, the U.S., which did not approve the compromise, opted out of the Agreement.

For the second hypotheses, we can conclude that India's Act on Biological Diversity is very much in conformity to the CBD as it focuses about the regulation of access to genetic resources, financial mechanisms, entrustments of full legal authority under NBA, and benefit sharing mechanisms. From the preservation of biological resources to distribution of gains arising out of the benefit sharing of resources, only NBA is the sole regulator.

### **Way Ahead**

To be effective of the implementation programmes and conservation strategies, we need to take a habitat approach by supporting watershed production and harvesting of non-timber products Besides these, protection of wild flora and fauna through wildlife reserves, national parks, zoos, botanical garden is also an important short-term step to conserve immediate extinction. The goal of bio-diversity conservation should not be to safeguard all wild resources in a limited set of wildlife resources but to protect critical biodiversity and ecological thresholds everywhere. It should give resource users the means to respond to the

social cost of resource that is consistent with social interests. To make more progress in the implementation of conservation programmes, transparency of information, public participation in developing and implementing international environmental institutions, the emergence of economic incentives and market mechanisms are very important. The very crucial factor for the implementation of the Convention is to get adequate financial resources.

NGOs and industry need to be provided with direct and legitimate channels for providing reports to secretariats and in evaluating compliance also. They are likely to continue to expand their influence in the negotiation, implementation, and compliance process of international environmental legal agreements. An informed public is also the most effective custodian of bio-diversity.

In addition to these suggestions, the following policies can be helpful in the process of conservation of the biological diversity of the world:

- i) a regulatory regime to protect key species, habitats and ecological services-including a system of protected areas;
- ii) removal of restriction in the movement of genetic resources of the country for research purposes among the developing countries;
- iii) developing research capabilities in the area of conservation and biotechnology in developing countries;

- iv) enhancing cooperation with other Conventions;
- v) strengthening of regional co-operation;
- vi) transparency in mega development projects;
- vii) persuading non-member states to join CBD;
- viii) creation of more gene banks and transfer of technological and financial help from the developed countries; and
- ix) providing more bio-diversity education and awareness among the people.

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