CHAPTER THREE

BIODIVERSITY

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3.1 Introduction

Biodiversity, in simple terms, is a measure of the health of ecosystems. More technically, biodiversity can be defined as degree of variations of life forms within a species, ecosystem, biome and the entire Earth. Conservation of biodiversity, in any ecosystem acts as a bulwark against abrupt instabilities and makes it more resilient. Economically too, biodiversity is important for agriculture, food security, industry, medicine etc. Biodiversity also proffers rich externalities in various forms – recreation, aesthetics, environmental conservation. In the great saga of evolution, extinction which means, irreversible and complete disappearance of certain life forms from the face of the Earth has not been unnatural. However, the rates of extinction of life forms have been accelerated to unnatural and dangerous rates because of anthropogenic factors. Destruction of natural habitats, clearing of forests for such reasons like building roads, creating townships and industrial estates, constructing dams pose serious threat to biodiversity. The continuous and unbridled loss of biodiversity has catastrophic consequences and is a matter of grave concern worldwide. Recognizing the importance of biodiversity conservation in sustainability, the United Nations has declared 2010-2020 as the UN Decade of Biodiversity.

Biodiversity of any given area being a function of precipitation, temperature, soils, altitude etc, its distribution across the globe is quite uneven. For instance, terrestrial biodiversity is as much as 25 times higher than marine biodiversity. Within the terrestrial habitats, tropics are found to support much richer biodiversity than alpine or polar regions. India is considered very rich in biodiversity. It is estimated that about 1/6th plant species of entire world belong to India. An area with a high concentration of endemic species is called a “hotspot”. Out of the twelve hotspots of the world, two (North East and Western Ghat areas) are in India.

Biodiversity conservation efforts have many facets – scientific surveys, policy reforms, legislative initiatives, international co-operation, public participation etc. National agencies like the Forest Survey of India, Botanical Survey of India, Zoological Survey of India carry out extensive studies continuously to assess the extent of diversity and the change trends across habitats, flora and fauna. The country has enacted a number of legislations which have direct impact on biodiversity conservation efforts like the Indian Forest Act 1927, the Wildlife

Protection Act 1972, the Forest (Conservation) Act 1980, the Environmental Protection Act 1988 and The Biological Diversity Act 2002 being the most important among them. By amending the Constitution, protection of forests and wildlife has been made one of the Fundamental Duties. Because of being incorporated in the Concurrent List, Forests and Wildlife has been accorded a national perspective in policy making and legislation. India is signatory and zealous participant in international efforts of biodiversity conservation like the Convention on International Trade in Endangered Species (CITES), the Convention on Biodiversity (CBD) and the country has evolved a National Action Plan for Combating Climate Change.

The enormity and intensity of these efforts notwithstanding, there is hardly any room for complacency. Increase in population, urbanization, industrialization etc are often at the cost of destruction of habitats. The forces of development and that of conservation apparently bear adversarial relationships although this true only in the short term and both have commonalities in the long term. Rapid development at the cost of environmental degradation is doomed to be unsustainable. The country is endeavoring to balance the two.

Preventing a loss of biodiversity is important for mankind, given that humans depend on the natural richness of the planet for the food, energy, raw materials, clean air and clean water that make life possible and drive economies and societies. As such, a reduction or loss of biodiversity may not only undermine the natural environment but also economic and social goals. The challenges associated with preserving biodiversity have made this topic an international issue.

India's major biographic zones and their area are presented in table 3.1.1.

3.2 Plant Biodiversity

3.2.1 Plant biodiversity as a national and global resource is extremely valuable but is poorly understood, inadequately documented and often wasted. The preservation of biodiversity is both a matter of investment and insurance to a) sustain and improve agricultural, forestry and fisheries production, b) act as a buffer against harmful environmental changes, c) provide raw materials for scientific and industrial innovations, and d) safe guard transferring biological richness to future generations.