CHAPTER 4

Biodiversity Values and Development

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INTRODUCTION

Every living organism is dependent on the functions of ecosystems. Biological diversity is valued differently according to the level from which it is considered (local, national, global) and the criteria applied (material against non-material, commercial versus self-sufficiency, etc.). The non-utilitarian value assigned to nature represents its 'intrinsic value.'

Functions of biodiversity

Information functions. Inherent in biological diversity is the information contained in the vast profusion and complexity of flora, fauna, ecosystems and processes. The millions of plant and animal species on earth each have their own unique genetic composition. The majority of species are still unknown. So far, some 1.7 million plant and animal species have been described. Estimates of the total number of species differ widely; the World Conservation Monitoring Centre estimates the total to be about 12.5 million.

Regulatory functions. The regulatory functions relate to the maintenance of processes within ecosystems. The vegetation on slopes regulates moisture levels and prevents erosion, the so-called screening function; mangrove swamps are important spawning grounds for fish. In an ecosystem there is a balance between the different species due to grazing, competition and predation.

In man-made ecosystems, diversity of species (for example of soil organisms) contributes to balances between crops, biotic and abiotic factors.

Support functions. Every type of organism belongs to a specific community of plants and animals. Ecosystems form a complex of support systems within which plants and animals live: savannah-lands for antelopes and livestock, coral reefs for many species of fish, forests for numerous plant and animal species. If the demands placed by plants, animals or man on the carrying capacity of these life support systems are too great or if the ecosystems are harmed, diversity declines.

Individual plant and animal species also have a support function (for example cattle for certain insects, trees for insects, epiphytes and creepers).

Productive functions. Production and consumption is taking place continuously at all levels. Organisms use products to survive. When man uses these products, it is often at the expense of his fellow organisms.

BIOLOGICAL DIVERSITY AS A BASIS FOR SUSTAINABLE DEVELOPMENT

Agenda 21, a global plan of action that was adopted at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro urges that development at both national and international level should be guided by the principle of 'sustainable development', as defined by the Brundtland Commission: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

A prerequisite for economic and ecological sustainability is the maintenance of biological diversity for human needs, both consumptive and non-consumptive, as well as for its intrinsic values.

The main functions of biological diversity have already been stated to be: the production function, the regulatory function, the support function and the information function. This means that biological diversity forms the basis of sustainable development. Ecological sustainability can only be achieved by a careful evaluation of the relative importance of the functions concerned and by satisfying the ecological conditions for their conservation.

The fight against poverty, which is the first priority in development co-operation, is closely related to economic development, to the maintenance of the means of subsistence, and to an equitable sharing of the environmental space. With the wide range of uses which it provides, biological diversity means a diversity in basic supplies and the spreading of risks for many people in developing countries. Of crucial importance, finally, are the still largely unknown functions and future uses of nature. The conservation of biological diversity therefore means keeping options open for future generations.

Biological diversity forms an essential element of the common heritage of present and future generations in developing countries, and is therefore an integral component of sustainable development (common heritage of humankind).

There are very compelling arguments for an active conservation of biological diversity:

- the living world in all its diversity, provides a livelihood, both present and potential, for mankind;
- the biosphere must be maintained in such a state as not to jeopardise human survival;
- the continued existence of biological diversity should be guaranteed on its own merits, in particular as far as all present species are concerned with their evolutionary potential (World Charter for Nature).

Important reasons why development activities should be actively concerned with maintaining biological diversity are:

- Biological diversity is an essential component of, and a measure of, environmental quality in developing countries.
- The effects of the decline in biological diversity hit hardest those groups which are both most directly dependent on their natural environment and its products and have no resources for protection measures or for alternatives.
- Biological diversity is often greater, both per unit land area and in absolute terms, in tropical and sub-tropical countries than in countries in the temperate climatic regions.
- The geographical origins and centres of biological diversity for many cultivated crops are in the tropics and sub-tropics and these form the basic source for crop improvement.