NATURAL RESOURCES MANAGEMENT IN BANGLADESH: LINKING NATIONAL PRIORITY TO GLOBAL PERSPECTIVE

A.H.M. Ali Reza

Introduction

The earth's biological foundation is eroding at a rate unequaled in at least 65 million years (Johnson 1995). Rapidly escalating human demands for natural resources are causing genes, species, and natural ecosystems to disappear at an unprecedented rate. Therefore, conservation is becoming a crisis discipline. Deciding what to conserve and where is an essential first step in managing the crisis.

Although estimates vary widely, there may now be 30 million or more species on the earth. Living organisms are found everywhere on the surface of the planet, including such inhospitable places as the polar icecaps and deep within sulfur springs thousands of meters below the surface of the Pacific Ocean. The interaction of species with each other and their environments has multiplied with the growing diversity of life, giving rise to new evolutionary pathways that eventually contribute to the formation of new species and ecosystems. One of these pathways produced the species *Homo sapiens* roughly one million years ago.

Extinction is, however, a fact of life. Sooner or later, every species meets its fate; it may be overwhelmed by environmental changes or by the debut of a new species. The fossil record indicates that during the more than 3.5 billion year history of life, the average longevity of a species has ranged from less than a million years for some groups of mammals, to about 10 million years for certain groups of invertebrates and flowering plants (Wilson, 1992). The fossil record indicates that life has been impoverished by five massive extinction events during the past 450 million years, each of them wiping out between 25 and 50 percent of all biological families (Raup, 1988).

Diversity in genes, species, and ecosystems has contributed immensely to the productivity of agriculture, forestry, fisheries, and industry. Globally, species have been disappearing at 50-100 times the natural rate, and this is predicted to rise dramatically. Based on current trends, an estimated 34,000 plant and 5,200 animal species – including one in eight of the world's bird species – face extinction. In modern society, biodiversity contributes enormously to human welfare as well. For example, a substantially high figure of prescription drugs worldwide owe their existence to compounds first derived from plants, e.g. Neem (*Azadurachata indica*) is prescribed for malaria, skin disease, inflammation while Thankuni (*Centella asiatica*) is used as stimulant. The over-the-counter value of plant-derived pharmaceuticals alone exceeds US $ 40 billion per year worldwide (Miller and Tangley, 1991).

While the loss of individual species draws our attention, it is the fragmentation, degradation, and outright loss of forests, wetlands, coral reefs, and other ecosystems that poses the gravest threat to biodiversity. Forests are home for much of our known terrestrial biodiversity, but about 45 percent of the Earth's original forests are gone, cleared mostly during the past century. Up to 10 percent of coral reefs, among the richest ecosystems, have been destroyed, and one third of the remainder face collapse over the next 10 to 20 years. Coastal mangroves, a vital nursery habitat for countless aquatic species, are also vulnerable, with half already gone. The awareness of the need for conservation has been on the rise since the 1950's in the developed world. Rachel Carson, in her 1962 seminal work, **Silent Spring**, had signaled the

widespread effect of pollution on the environment. In 1972, another significant book, **The Limits to Growth** articulated the fear of exhausting the earth's non-renewable resources. These were some important milestones in raising worldwide consciousness of the adverse environmental impacts of the development activities. The idea that the environment and development are two sides of the same coin had become apparent in the 1970s. In 1972, the first major world conference on Human Environment was held in Stockholm, where Heads of States from all over the world came together for the first time to consider the state of the earth. The United Nations Environment Programme (UNEP) was established to deal with the environmental issues. The World Conservation Strategy was conceived by the The World Conservation Union (IUCN), UNEP and the Worldwide Fund for Nature (WWF) in 1980, as a means of providing a comprehensive, sector-wise analysis of conservation and resource management issues, to integrate environmental concerns into the development process: *"...because unless patterns of development that also conserve living resources are widely adopted, it will become impossible to meet the needs of today without foreclosing the achievement of tomorrow" (IUCN/UNEP/WWF, 1980)* The World Commission on Environment and Development (WCED), more popularly known as the Brundtland Commission after its chairperson Madam Brundtland, the former Prime Minister of Norway, was established by the UN in the mid 1980's. The commission held a series of private consultations with the leaders, experts, governments and people in different regions and published its landmark report called "Our Common Future" in 1987. In 1991, a revolutionary book was published: **Caring for the Earth** (IUCN/UNEP/WWF, 1991) which documented the principles and strategies for sustainable living.

Following the Brundtland Commission Report, the issues and concepts of sustainable development have been adopted by the UN as well as most of the countries and led to the UN General Assembly resolution in 1989 to hold a World Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in 1992, also known as "Earth Summit". In Rio, over 110 Heads of States or Government officially signed four documents: i) the Rio Declaration; ii) Agenda 21; iii) the Framework Convention on Climate Change; and iv) the Convention on Biological Diversity (CBD). The CBD is the first global agreement on the conservation and sustainable use of biological diversity. Over 150 governments signed the document at the Rio conference, and since then more than 175 countries have ratified the agreement. The Convention reminds decision-makers that natural resources are not infinite and sets out a new philosophy for the 21st century – that of sustainable use.

Bangladesh perspective

A broad range of ecosystems are found in Bangladesh, including tropical evergreen forests, deciduous forests, mangrove forests, riparian and coastal wetlands, and the littoral, sub-littoral and benthic communities of the Indian Ocean. Over 50% of Bangladesh can be classified as wetlands (Khan *et al.*, 1994). Together with neighboring India, Bangladesh supports the largest remaining mangrove forest in the world – the Sundarbans. Bangladesh has a rich agro-biodiversity. Over 12,000 plant varieties have been recorded to date, representing a valuable, but rapidly vanishing, genetic resource. On the other hand, many of the faunal species are globally threatened, such as the Asian elephant, the Bengal tiger, the Gangetic gharial, the Ganges river dolphin and the hoolock gibbon, among others. Although it is not frequently recognized, Bangladesh supports a wealth of biodiversity, including 113 species of mammals, 628 species of birds, 126 species of reptiles, 22 species of amphibians, 708 species of freshwater and marine fishes, 400 species of mollusks, about 70 species of bees and as many species of wasps, about 5,700 species of angiosperms (68 woody, 130 fiber yielding, 500 medicinal, and 29 orchids), 1,700 species of pteridophytes, and 3 species of Gymnosperms (Nishat *et al.*, 2002). In 2000, the IUCN-Bangladesh Country Office published the **Red Book of Threatened Animals of Bangladesh**, which listed 43

species of mammals, 47 birds, 63 reptiles, 8 amphibians and 58 fish species as facing various degrees of extinction. According to the similar exercise recently completed by the Bangladesh National Herbarium, 106 vascular plant species face risks of various degrees of extinction in Bangladesh.

Table 1: List of threatened animals of Bangladesh

Group	Total no. of Living Species	Threatened Critically Endangered (CR)	Endangered (EN)	Vulnerable (VU)	Total	Not Threatened
Fishes	708	12	29	17	58	584
Amphibians	22	0	3	5	8	7
Reptiles	126	13	28	27	63	24
Birds	628	19	20	8	47	413
Mammals	113	21	15	7	43	17
Total	**1,597**	**65**	**94**	**59**	**219**	**1,045**

Source: IUCN Bangladesh, 2000

In the vast majority of extinctions, we will never know what we are missing. Only a fraction of the world's total number of species – estimated to be between 10 and 30 million – have been identified and described by science (Johnson, 1995). For instance, IUCN Bangladesh has very recently reported the sighting of the Asian leaf turtle (*Cyclemys dentata*) in the Chittagong Hill Tracts and black krait (*Bungarus niger*) from the Sundarbans mangrove forest, which were not nationally described to have occurred in the past. Moreover, IUCN Bangladesh has also reported the sighting of the Indo-Pacific hump-backed dolphin (*Sousa chinensis*) and Nypa mollusk (*Enigmonia aenigmatica*) in the Sundarbans mangrove forest of Bangladesh, which were also not nationally described earlier. But even if human society does not notice the passage of these anonymous species, it is clear that biological resources in their myriad forms are essential to human welfare.

The biodiversity of Bangladesh, however, faces a broad array of anthropogenic threats. With more than 130 million people, a population growth rate of 2.17 percent, and a population density of 800 people per km^2, the pressure on the nation's natural resources is intense. Population pressure, habitat loss and fragmentation, pollution, illegal killing and hunting are putting tremendous pressure on the existing biodiversity of the country. Hence, over the last 100 years, Bangladesh has lost about 10 percent of its mammalian fauna, 3 percent of its avifauna and 4 percent of the reptilian fauna (Khan, 1998). If the current trend is allowed to continue, many more of our precious species will end up in the following extinction list.

Table 2: List of wildlife extinctions in Bangladesh during the last century

Group	Common name	Scientific name	Past distribution
Reptiles	Marsh crocodile	*Crocodylus palustris*	Most of the rivers throughout Bangladesh
Birds	Pin-headed Duck	*Rhodonessa caryophyllacea*	Haor wetlands and some parts of mixed evergreen forest

	Common Peafowl	*Pavo cristatus*	Deciduous forests of Bangladesh
Mammals	One-headed Rhinoceros	*Rhinoceros unicornis*	Sundarbans, Garo hills, Valleys of Sylhet and wetlands of Mymensingh
	Asiatic Two-horned Rhinoceros	*Didermoceros sumatrensis*	From Comilla to Teknaf in the evergreen forest wetlands
	Javan Rhinoceros	*Rhinoceros sondicus*	Chittagong Hill Districts
	Wolf	*Canis lupus*	Last sighted in Noakhali
	Swamp Deer	*Cervus duvauceli*	Sundarbans and moist deciduous forest of Mymensingh
	Hog Deer	*Axis porcinus*	Sundarbans and Sylhet
	Gaur	*Bos gaurus*	All inland forests
	Wild Buffalo	*Bubalus bubalis*	Low-laying chars in the southern districts, wetlands of Jessore, Sylhet, Mymensingh, Sundarbans and valleys of CHT
	Nilgai	*Boselaphus tragocamelus*	From Tetulia to Barind tract
	Banteng	*Bos benteng*	Inland forests

Source: IUCN Bangladesh 2000

A quiet revolution has been under way since the first half of the 1990's as, keeping the pace with the rest of the world, environmental sustainability, viz. sustainable development planning, has become a central theme of policymakers in Bangladesh. The Government's pro-nature commitment is reflected in the new Ministry of Environment and Forest (MoEF) and an upgraded Department of Environment (DoE). Moreover, the Government has also formulated some long-term sustainable environment management plans and programs, which will be discussed later on. There are two important national documents related to management of the environment in Bangladesh, which have subsequently been translated into programs: 1) the National Conservation Strategy (NCS); and 2) the National Environment Management Action Plan (NEMAP).

Policy intervention

National Conservation Strategy (NCS): The NCS aims to incorporate environmental considerations into the development planning process. The major objectives of the NCS are to provide a guide for development practitioners on the means to preserve or improve the environment while pursuing the goal of sustainable development. The NCS provides an overview of issues and develops a strategy, while NEMAP provides action plans for specific projects.

National Environment Management Action Plan (NEMAP): NEMAP is an environmental planning exercise that was initiated by the Government of Bangladesh through the MoEF following the commitments made under Agenda 21 at UNCED. The objectives of NEMAP are very similar to those of the NCS. The key element that distinguishes NEMAP from the NCS is the full participation of the common people, interest groups, resource users and stakeholders, NGOs and lobbyists in all phases of planning and implementation of its policies, programmes and projects (MoEF, 1991). **Environmental Policy and Action Plan, 1992:** It provides sector-wise policy guidelines, which should be developed by the respective ministers. An implementation plan, appended to the policy, is an integral part of it. It outlines the actions that various Government agencies and NGOs should undertake to implement the policy.

Progammes for natural resources conservation

A considerable number of natural resources and biodiversity-related programs and projects are now in the planning stage or under the process of implementation. Some of the major programs which will be discussed briefly here are the NCS Implementation Project, Ramsar Site Conservation Initiative (Tanguar Haor), NEMAP Implementation Project, Sustainable Environmental Management Programme (SEMP), Sundarbans Biodiversity Conservation Project (SBCP), and Biodiversity Strategic Action Plan Project (BSAP). Moreover, there are also some initiatives that are in the process of implementation: Forestry Sector Project; Coastal and Wetland Biodiversity Management Project (CWBMP); Biodiversity Conservation in the Sundarbans Reserved Forest Project; the Strengthening of the Department of Environment Project, Integrated Coastal Zone Management Project, Forest Resource Management Project, Coastal Green Belt Project, etc.

National Conservation Strategy Implementation Project (NCSIP): MoEF started the NCSIP in 1994 with an aim to piloting conservation practices in selected ecosystems with financial support from the Norwegian Agency for Development Cooperation (NORAD). A number of projects have been planned under the NCSIP, among which are important projects such as Tanguar Haor Wetland Biodiversity Conservation, and Conservation of Coral Resources of Narikel Jinjira (St. Martin's Island).

Ramsar Site Conservation Initiative (Tanguar Haor): The NCSIP of MoEF initiated the Tanguar Haor Pilot Project in January 2000. The goal of the project is to ensure the long-term conservation of the globally significant biodiversity of Tanguar Haor. To this end, the project is looking into the restoration program to safeguard habitats important for maintaining biodiversity, curb threats to biodiversity, reduce pressures on the natural resources by means of resource substitution and a poverty alleviation program, and develop the local capacity for sustainable resource utilization.

NEMAP Implementation: NEMAP is now in its implementation phase. A number of development partners are implementing various segments of NEMAP. These include the United Nations Development Programme (UNDP), the World Bank, the Canadian International Development Agency (CIDA), and NORAD. Four projects are in progress. The Air Quality Monitoring Project (AQMP), Bangladesh Environment Management Programme (BEMP) and the Sustainable Environment Management Programme (SEMP) are in their final stages of implementation.

Sustainable Environment Management Programme (SEMP): With a grant of US$ 26 million, SEMP is UNDP's largest environmental programme across the world. It has 26 components being implemented by 21 sub-implementing agencies (Government: 08, Professional bodies: 02 and NGOs: 11). SEMP has five broad sub-programmes: a) Policy and Institution; b) Participatory Ecosystem Management; c) Community-based Environmental Sanitation; d) Advocacy and Awareness; and e) Training and Education. SEMP is intended to benefit the grass-roots level population and encourage the participation of women in the eco-specific intervention areas.

Sundarbans Biodiversity Conservation Project (SBCP): The MoEF, with financial support from the Asian Development Bank (ADB), initiated a project called the SBCP. The overall objective is to develop a sustainable management and biodiversity conservation system for all Sundarbans reserve forest resources on the basis of rational plans and the participation of all key stakeholders.
Biodiversity Strategic Action Plan (BSAP): MoEF, with financial support from the Global Environment Facility (GEF)/UNDP, recently launched the BSAP project. BSAP will focus mainly on building a unifying framework to guide and coordinate various biodiversity-related programmes and projects that are now under implementation, identifying national biodiversity priorities, or allocating lead responsibilities. Hence, the BSAP will reflect

the biodiversity conservation aspirations and will build on existing national strategies and plans. The project will allow Bangladesh to meet its obligations under the CBD.

Legal mechanism for natural resource management

The conservation and management of the nation's natural resources is the responsibility of many different government bodies, including the MoEF, Ministry of Agriculture, Ministry of Fisheries and Livestock, Ministry of Land, and Ministry of Water Resources. The Forest Department (under MoEF) is a specialized body dealing with the management of forest reserves, wildlife and protected areas. The DoE is another specialized body under the MoEF, dealing primarily with 'brown' and 'grey' issues in the environment sector. Responsibilities, communication channels and coordination mechanisms among the many different ministries and departments remain poorly defined and unclear.

Many of the nation's natural resource management laws and policies have their origins in the British colonial period. As a result, they are no longer suited to present day needs for the conservation of biodiversity and the sustainable use of its components. Similarly, important aspects of the obligations under the CBD – such as access to genetic resources – have yet to be accorded legal backing.

The first major law that was promulgated for the specific purpose of conservation of nature and protection of environment is the Environmental Conservation Act of 1995, which was followed by the Environmental Conservation Rules (ECR) of 1997. In addition, there are around two hundred laws in Bangladesh, which have, in some cases, direct relevance to the environment. In most cases, the primary objective of these laws does not concern natural resource management or address environmental pollution directly. Recently, the Government passed the Environmental Court Act, 2000 to deal with environmental offences more effectively. The Act provides for the establishment of one or more Environmental Courts, primarily in each division of the country, with specific terms of references to deal with environmental offences. It is envisaged that the court will facilitate speedy disposal of cases concerning environmental offences as defined in the Environmental Law.

The road ahead

As Noss (1993) observed, it is sustainability that depends on biodiversity, not the other way around. However, conservation in Bangladesh is still being regarded as a negative factor generally deterring development. However, as a signatory to the CBD and Agenda 21, which envisaged the sustainable use of biological resources, policy and lawmakers in Bangladesh must understand the implications of the conservation issues.

We have come a long way towards defining the norms of sustainable development. We have revised our policies, ratified international conventions, treaties and protocols, developed and adopted new strategies, implemented new programmes and projects – all of which are meant to ensure sustainable development. Yet, we are still miles behind in translating all these excellent instruments into actual practice. More importantly, conservation issues for protection of habitats and wildlife are still not given due importance. Biologists typically involved in setting conservation priorities often fail to realize a simple fact of life that helps to explain why conservation priorities are so often ignored, which is that in most circumstances, effective conservation is ultimately, for better or worse, a political process whose chances of success are improved through wider participation. Therefore, one of the key prerequisites for launching a successful conservation initiative is a national political consensus. Multi-stakeholder involvement and ownership in decision making is a precondition for a holistic development, i.e., sustainable development. Without such a consensus, the key challenges of environ- mentally sound, socially justified and equitable economic development will be a far dream.

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Author's address: c/o Department of Zoology, Jahangirnagar University, Savar, Dhaka 1342, Bangladesh; E-mail: wild_reza @hotmail.com