ENVIRONMENTAL LEGISLATION AND INSTITUTIONS IN NEPAL

HANDBOOK ON NATIONAL ENVIRONMENTAL LEGISLATION AND INSTITUTIONS IN NEPAL

FOR

SOUTH ASIA COOPERATION FOR ENVIRONMENT PROGRAMME (SACEP) COLOMBO, SRI LANKA

UNDER THE UNEP/ SACEP/ NORAD PUBLICATION SERIES ON ENVIRONMENTAL LAW AND POLICY

PREFACE

The South Asia Co-operative Environment Programme (SACEP) has identified and managed this project for the preparation of Handbooks of National Environmental Legislation and Institutions in South Asia. The project is part of a publication series on Environmental Law and Policy under the auspices of the United Nations Environment Programme (UNEP), SACEP and the Norwegian Agency for Development (NORAD).

To undertake the project, National Task Forces of environmental law experts for each South Asian country were formed with the help of their respective Governments. Meetings of the National Task Force Members were organized by SACEP in Sri Lanka to formulate a common framework for the preparation of national reports on environmental legislation. UNEP, SACEP, and Country Missions attended the meetings.

The framework developed deals extensively with environmental issues and legislative responses in the South Asian region. It seeks to cover relevant topics although not all could be accommodated due to space limitations. To make use of the regional nature of the project, a regional overview sets the law and policy context. Then, for each country, the background of socio-economic development is described and roles played by the judiciary, NGOs, and civil society are highlighted. Emphasis is placed on descriptions of the institutions, legislation, policies and programmes that evolved after the Stockholm Conference on the Human Environment in 1972. National measures are analysed according to framework and sectoral subject matter. Enforcement of national and legislation and compliance with international obligations under Multilateral Environmental Agreements are focused on. The objective of the project was not merely to describe legislation and institutions in the South Asian region, but also but to assess their effectiveness in application as tools for environmental management. Thus, each publication focuses on environmental governance, particularly the implementation of legislation.

The information/material available on the web sites of UNEP and related organizations, such as ESCAP, UNDP, the World Bank, ADB, SACEP, SAARC and secretariats of the various environmental conventions were used by members of the National Task Forces in their research. Information available on the web sites of Governments of individual SACEP countries, including the websites of and national institutions were also utilised.

The Task Force Members for each country are listed in the national Handbook that they prepared. They each deserve primary credit for their respective Handbooks of National Environmental Legislation and Institutions in South Asia. Dr Rashid Hasan edited the composite national contributions in the form of a regional synthesis report under the title of the –South Asian Handbook of National Environmental Legislation and Institutions", shaping the contributions into a common format. Due to the size of this volume, it was then revised as a series of National Handbooks. The guidance of Mr. Lal Kurukulasuriya, Chief of Environmental Law, UNEP; Mr Anand Raj Joshi, former Director, SACEP; Mr. Maqbool Elahi, Director, SACEP; Mr Prasnatha Dias Abeyegunawardene, Deputy Director, SACEP; and Mr. Nirmal Andrews, Director, ROAP/UNEP, Bangkok, are

gratefully acknowledged for their direction and encouragement in preparation of the project.

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CHAPTER I

EXECUTIVE SUMMARY

1. INTRODUCTION

His Majesty‘s Government (HMG) of Nepal has developed a range of legislative and policy devices, as well as providing the Ministry of Population and Environment with the executive power to implement international Conventions and Treaties. It appears that while many of these provisions are extensive in nature, their implementation has in practice been hampered by a lack of human and economic resources, insufficient or non-existent infrastructure for standards monitoring, and unclear lines of authority.

In common with the smaller south Asian countries, Bhutan and the Maldives, but in contrast to the larger countries, Bangladesh, India, Pakistan and Sri Lanka, there is no chapter in this Handbook addressing the role of the judiciary. In Nepal, the judiciary has not taken an activist role in environmental management.

2. CONSTITUTIONAL PROVISIONS

HMG is constitutionally bound to consider the environment in all decisions, and to make specific provisions for its protection. Clause 4 of Article 26 provides:

> ‗The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness and the State shall also make arrangements for the special protection of the rare wildlife, the forests and the vegetation.‘

In addition to Clause 4 of Article 26 of Nepal‘s constitution, Part IV, of Article 19(3) provides that the social objective of the Panchayat System shall be to establish a harmonious social life, based upon morality, by eliminating the obstacles that may arise in the process of mobilising the general public for setting up of a society as envisaged by clause (1) with due regards to the existing mutual tolerance of the cultural and traditional values of Nepal from time immemorial.

Under the constitution of Nepal, there are three general types of treaty that require procedures for ratification or acceptance:

a) A treaty that requires the ratification of, accession to, acceptance of, or approval by a majority of two thirds of the members present at a joint sitting of both Houses of Parliament.

Pursuant to Article 126(2) of the Constitution, such treaties are categorised as follows:

i) peace and friendship,
ii) defence and strategic alliance,
iii) boundaries of the kingdom of Nepal, and
iv) natural resources, and the distribution of their use, which is not ordinary in nature and which may affect the nation extensively, seriously or in the long-term.

b) A treaty or agreement that requires the ratification, accession to, acceptance or approval of a simple majority of members present in the House of Representatives. This procedure applies to treaties that fall under sub-clauses (a) and (d) of Article 125(2), in which the treaty or agreement is of an ordinary nature that does not affect the nation extensively, seriously or in the long term (Article 126(2)).

c) A treaty that does not require an act of ratification for its commencement. This may occur only if a treaty or agreement does not fall into the four categories of treaties or agreements under Article 126(2) of the Constitution.

Since 1990, it has been the new Constitution that has given direction to the environmental policies and plans formulated in Nepal.

3. ENVIRONMENTAL INSTITUTIONS

In addition to the Ministry of Population and Environment, HMG has constituted the National Planning Commission (NPC), which must assess and approve all public environmental policies, programmes and projects before they take effect. As the NPC also plays a role in co-ordinating inter-sectoral activities, and monitoring environment-related actions and providing a budget, this integrated role as overseer is very important.

Other institutions which are important to the environmental governance in Nepal include:

- The Ministry of Agriculture
- The Ministry of Forest and Soil Conservation
- The Ministry of Industry
- The Parliamentary Committee on Natural Resources and Environmental Protection
- Private and public product Testing Institutes

Additionally, the Eighth Five-Year Plan in Nepal supported the creation of a high-level Environment Protection Council, an advisory body with the Prime Minister as chair, to formulate policies, give directives, and establish inter-ministerial coordination and monitoring related to environmental management. The Ministry of Population and

Environment (MOPE) has prepared a new five-year Strategic Plan with a view to mainstreaming environmental aspects in socio-economic development plans and programmes. This plan outlines MOPE‘s mission, goals, strategies, priority activities and outputs. The recommended mission of the Ministry is _topromote environmentally sound and sustainable development and thereby safeguard human health‘. The Strategic Plan aims to integrate environmental instruments in economic development planning and decision-making; develop and strengthen human resources (knowledge based and technical/scientific) and institutions; institutionalise stakeholders‘ participation on environmental management; and minimise pollution load through the enforcement of environmental legislation and standards.

In response to the growing awareness about the importance of mainstreaming environmental programmes in the development planning and implementation, Nepal also prepared the Nepal Environmental Policy and Actoin Plan (NEPAP) which was endorsed by the Environment Protection Council in 1993. Since 1993, several institutions have continued the incorporation of selected activities in programme planning and implementation. However, much of the policy still remains to be implemented.

4. ENVIRONMENTAL LEGISLATION

An umbrella act – the Environment Protection Act, 1997 – is in place and environmental regulations have since come into force. The Environment Protection Act makes impact assessment mandatory for major development projects. In the area of impact assessment, EIA legislation has been harmonised into National EIA Guidelines which clearly name the National Planning Commission, the Environment Division and the relevant line ministries as the agencies responsible for reviewing the EIS. Additionally, sectoral guidelines for environmental management have been prepared in respect of forests, roads, tourism, water and industry.

5. ANCILLARY PROVISIONS

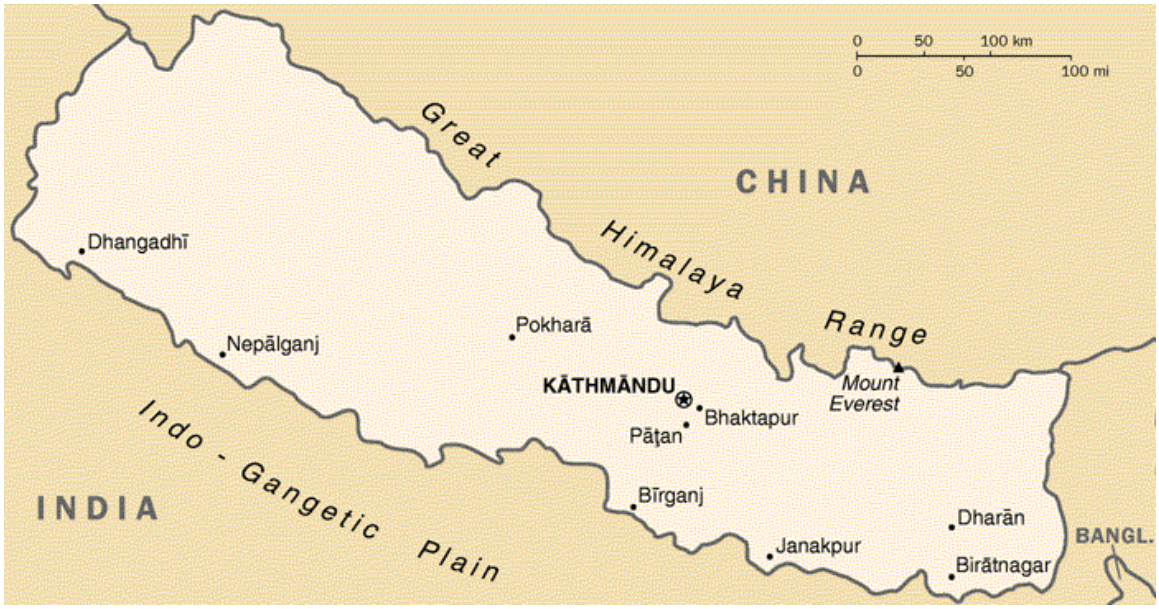
Eight national parks, four wildlife reserves, one hunting reserve and three conservation areas have ensured, in situ, conservation of biological diversity in about 18 per cent of the of the country. Various programmes have been launched to maintain the habitat and to increase the number of wildlife species classified as endangered, threatened and vulnerable. Continuous efforts by the government along with its conservation partners, both international and national Non-Government Organisations (NGO‘s) as well as the community, have proven successful in bringing about positive changes in the conservation of biological species.

In order to conserve biodiversity in Nepal, a wildlife conservation plan was introduced in the early 1970s. Its purpose was to conserve biodiversity through the designation of protected areas.

CHAPTER II

LIST OF ENVIRONMENTAL ISSUES, POLICIES, LEGISLATION, INSTITUTIONS AND INTERNATIONAL CONVENTIONS IN NEPAL

Map of Nepal



Key Environmental Issues

Forest Depletion, Land Degradation; Soil degradation; Water Pollution, Air Pollution; Inadequate Capacity for Management of Environment; Loss of Biodiversity; Rapid Urbanization; Industrial waste; Landslides; Lack of Agricultural Land; Vehicular pollution; Indoor Pollution; Environment Education; Environment Capacity Building;

Environmental Policies

Nepal Environment Policy and National action Plan, 1993 updated in 1998; Nepal‘s Five Year Ninth Plan, 1995-2001

Legislation Related to Environment

Environment Protection Act, 1997; Environment Protection Regulation, 1997; ODS Consumption Rules, 2001; Forest Act, 1993, Water Resources Act, 1992 ; Electricity Act, 1992 ; Constitution of the Kingdom of Nepal 1992; Transport Act, 1992 ; Constitution of the Kingdom of Nepal, 1990; Pesticides Control Act, 1991 ; Nepal Water Supply Corporation Act, 1990 ; Village Development Act, 1990 ; Municipality Act, 1990 ; District Development Board Act, 1990; Kathmandu Valley Department Authority Act, 1988 ; Royal Academy of Science and Technology Act, 1988 ; Pashupati Area Development Trust Act, 1987 ; Solid Waste Management and Resource Mobilization Act, 1986 ; Nepal Electricity Authority Act, 1983 ; Nepal Petroleum Act, 1983 ; International Centre for Integrated Mountain Development Act, 1983 ; King Mahendra Trust for Nature Conservation Act, 1982 ; Soil Conservation and Watershed Management Act, 1982 ; Decentralization Act, 1982 Natural Calamities Relief Act, 1982 ; Nepal Standard Act, 1979 ; Narcotic Drugs Control Act, 1976 ; Medicines Act, 1976 ; Animal Feeds Act, 1975 ; Pasture Land Nationalization Act, 1974 ; Public Roads Act, 1974 ; National Parks and Wildlife Conservation Act, 1973 ; Plants Protection Act, 1972 Jhora Sector Land Distribution Act, 1972 ; Town Development Plan (Implementation) Act, 1970 ; Rapti Doon Land Development Area (Sale and Distribution) Act, 1967 ; Canal, Electricity and Related Water Resource Act, 1967 ;Forest Protection (Special Arrangements) Act, 1967 ; Food Act, 1966 ; Agriculture Development Bank Act, 1966 ; Malaria Eradication Act, 1965 ; Contagious Diseases Act, 1965 ; Nepal Medical Council Act, 1965 ; Tourism Industry Act, 1965 Tourism Act, 1957, and Mountaineering Regulation, 1979 ; Highway Construction Act, 1965 ; Mills Act, 1965 ; Town Development Committee Act, 1964 ; Vehicles Act, 1964 ; Nepal Electricity Act, 1964 ; Explosives Act, 1963 ; Land Acquisition Act, 1963 ; Forestry Act, 1963 ; Irrigation Act, 1963; Industrial Enterprises Act, 1962 (revised 1982; new Act, 1992); New Civil Code, 1962 ; Aquatic Animals Protection Act, 1961; Land Survey Act, 1961; Birta Abolition Act, 1959; Nepal Factory and Factory Worker's Act, 1958; Civil Aviation Act, 1958; Nepal Industrial Development Corporation Act, 1958; Wildlife Protection Act, 1957; Nepal Mines Act, 1956 (new Act in 1985); Private Forest Nationalization Act, 1956; Forest Protection Act 1956; Lands Act, 1956 (Revised 1965); Ancient Monuments Protection Act, 1956; Animal Feed Act, 1956; Royal Nepal Airlines Act, 1956 (revised 1963);

Environmental Institutions

National Planning Commission; Environment Protection Council; Ministry of Population and Environment; Ministry of Forest and Soil Conservation; Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and Communication Ministry of Defence Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of land tenure, land

management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

International Conventions/Treaties/Protocols (ICTPs) in the Field of Environment to which Nepal is a Party

- Plant Protection Agreement for the South-East Asia and Pacific Region, Rome, 1956. Nepal acceded to the Agreement on 12 August 1965.
- Convention on the High Seas, Geneva, 1958. Nepal ratified the Convention on 28 December 1962.
- Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water, Moscow, 1963. Nepal ratified the Convention on 7 October 1964.
- Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Washington, 1967. Nepal ratified the Convention on 10 October 1967.
- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971. Nepal acceded to the Convention on 17 December 1987.
- Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea Bed and Ocean Floor and the Subsoil Thereof, London, Moscow, Washington, 1971. Nepal ratified the Convention on 6 July 1971.
- Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972. Nepal accepted the Convention on 20 June 1978.
- Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972. Nepal ratified the Convention on 1 January 1973.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973. Nepal acceded to the Convention on 18 June 1975.
- Vienna Convention on the Protection of the Ozone Layer, 1985. Nepal ratified the Convention in 1994.
- Montreal Protocol on Substances that Deplete the Ozone Layer, 1987. Nepal acceded to the Protocol in 1994.
- London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990. Nepal acceded to the Convention on : 1994.
- Agreement on the Network of Aquaculture Centres in Asia and the Pacific, 1988. Date of Ratification/Accession (AC): 4 April 1990 (AC).
- United Nations Framework Convention on Climate Change, 1992. Nepal ratified the Convention on 2 May 1994.
- Convention on Biological Diversity, 1992. Nepal ratified the Convention on 23 November 1993.

- Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989. Nepal acceded to the Convention in August 1996.
- Convention on Combating Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994. Nepal ratified the Convention in 1996.

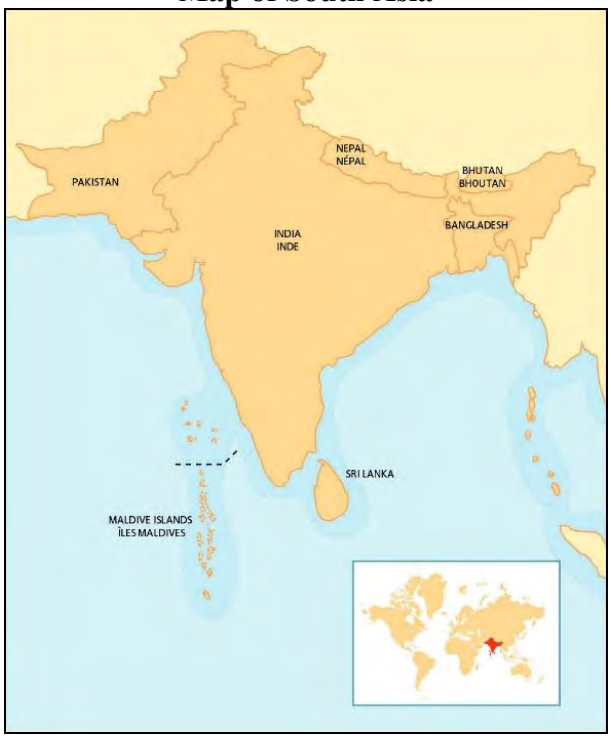
CHAPTER III

REGIONAL OVERVIEW

1. INTRODUCTION

The South Asian region comprises Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka. Given the economic, social and cultural context of the countries of South Asia, similar challenges confront these regions in relation to the protection of their environment and natural resources. For instance, high rates of population growth, urbanization, and a widespread incidence of poverty are common, although all major indicators of human development have demonstrated improvements in recent years. South Asia is also home to a significant but decreasing array of terrestrial and marine biodiversity. For example, the Hindu Kush Himalayan belt is home to some 25 000 major plant species, comprising 10 per cent of the world‘s flora. In addition, Sri Lanka, India and other countries within the region are amongst the most biologically diverse countries in the world. India contains extensive savannah and forest habitats, including many endemic species of international importance, which exemplify the biological diversity of the South Asian region. South Asia is also home to approximately 14 per cent of the world‘s remaining mangrove habitat and has the highest percentage of threatened wetlands, 82 of which are in Bangladesh. The region has attained significance due to enormity of resources and biodiversity vis-à-vis developmental activities in the region.

Map of South Asia



The Rio Declaration on Environment and Development and Agenda 21 emphasised the need to develop endogenous capacity in the legal and institutional areas, which is critical for sustainable development. In this past decade, countries in South Asia have taken remarkable steps towards developing sustainable legal institutional frameworks for improved environmental management. The most successful measures taken have strengthened the synergy and coordination among various institutions for promoting a coherent and holistic approach to the management of the environment.

The legal system, and particularly the judiciary, has been a crucial partner in this process. An increasing awareness of the importance of the legal and institutional system, with regards to management within the last decade, has been a first step. There has been a continuing drive towards consolidation of the institutional structure, both conceptually and functionally, from the management of sectoral uses of the environment to the management and protection of environment in its own right. Opportunities to strengthen national and regional environmental policies and legislation that effectively integrate global, regional and national environmental priorities and concerns have been taken up. Consequently, many countries in this region have developed and incorporated contemporary approaches to environmental management.

2. ENVIRONMENTAL GOVERNANCE

Almost all the developing countries in the Asia-Pacific region have made considerable progress during the past two decades towards the fortification of the legal and institutional structures for environmental management, natural resource conservation and sustainable use. This has also incorporated a growing regard for the integration of environmental considerations in development decision making. Significant as these developments are, there remains many difficult challenges to be overcome if these legal and institutional arrangements are to function effectively. There is little doubt that building upon the gains of the past in the institutional field and promoting more effective compliance and enforcement of existing regulations will be the major focus of countries in the region in the coming years. The institutional developments that have taken place in the region demonstrate some of the major impediments that countries face in transforming these gains into an effective and efficient vehicle for advancing the goals of sustainable development. Conversely, these developments also outline some possible responses to such challenges, which if implemented with efficacy could allow recent gains to be consolidated and form the foundation for future achievements.

In the preliminary lead up to the Rio Conference and for several years thereafter, there was a multitude of legislative and institution building activities in the region. This resulted in the creation of Ministries of Environment and their executing arms and the enactment of a new generation of legislation now simply known as environmental laws. Consequently, almost every country in the South Asia region now has a Ministry or Agency empowered by law to implement a wide range of activities for the protection of the environment, conservation and sustainable use of natural resources. Central to the

responsibilities of such agencies is an underlying concern to promote the integration of environmental considerations in development decision making.

However, in light of the centuries old administrative culture founded on the unchallenged authority of ―line- Ministries", the attempted implementation of the over-arching and cross-sectoral environmental legislation and institutions *within* the existing legislative and institutional framework, created a number of difficult challenges. Initially, the Environment Ministries were viewed with apprehension and were suspected of usurping the traditionally unquestioned functions of the line ministries and agencies with statutory functions. This atmosphere of distrust of the new legislative regime made interaction and partnership, which is the essence of effective environmental management, almost impossible. This in turn led to the proliferation of environmental cells in various Ministries and agencies, including National Planning Commissions, which although was not a bad development, it reinforced the lack of co-ordination and leadership that is essential to hold together a disparate system of environmental institutions with varying capabilities and jurisdictions. These problems were further exacerbated by legislative deficiencies. Ambiguous demarcation and overlapping powers and functions, a lack of specificity, dispersed competencies and procedural difficulties were but a few of the inherent defects in this new system. These problems were compounded by management and resource deficiencies, typified by the absence of horizontal and vertical consultation, a lack of delegation and decentralisation, inadequate financial, human and material resources and a lack of information and training.

Examples abound in almost every country in the region, where responsibility for environmental oversight is dispersed among a varying number of national institutions resulting in the weak implementation of policies, plans and laws, the under-investment in environmental improvement and lack of opportunities for local level participation. In Sri Lanka, some four or five ministries co-ordinate with one another for environmental decision making, including the ministries of Environment, Energy and Industry. Thus further complications are created by the clashing jurisdictions between the central government agencies and provincial agencies. In federal systems of government such as India these challenges and complexities are exacerbated by the constitutional separation of legislative and executive powers.

3. ENVIRONMENTAL INSTITUTIONS

Cabinet-level environmental agencies are now established in all South Asian countries, but in the absence of a clear direction, these bodies remain generally weak. The principal regulatory vehicle relied upon by these agencies has been the application of environmental impact assessments to review large development projects. Unfortunately this process has been poorly implemented and even subject to considerable corruption in several countries, which has undermined any potential success. Efforts to control industrial pollution through rigid permitting schemes—tied often to unrealistic emissions and discharge standards—have also had disappointing results. The over-emphasis of donors in supporting these fragile government environmental bodies has been to the detriment of other potentially more influential institutions. Ministries of central

governments deserve much greater attention. Outside the executive branch, legislative bodies are of growing importance as sources of innovation and action to address environmental issues of social concern, but have received very little support with respect to their involvement in environmental matters. Furthermore, as stated by the activist Supreme Court of India, the judicial branch has the potential to play quite a significant role in shaping environmental policy. However, it, too has received relatively little assistance in building its understanding of environmental issues and exploring options for positive action. At the same time, there is a strong trend toward decentralisation and devolution within the region. Essentially this means that an entirely new group of government agencies—at state, city, and local levels—will require environmental management skills.

The establishment of Environment Ministries in many countries in Asia in the last decade, has been a laudable achievement. Ministries have emerged in countries across the region including **Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka,** where they have the capacity to formulate environmental policies as well as overseeing the work of other ministries relating to the environment.

(i) Example Box 1: Environment Ministries in South Asia

In the **Maldives**, the Ministry of Population and Environment has the responsibility of formulating rules and regulations regarding the environment.

The ***Pakistan****, Environmental Protection Act 1997* established the **Pakistan** Environment Protection Council, which consisted of the Prime Minister and all Ministers in charge of the subject of the environment. In addition the Council was composed of at least twenty 'non-officials' including representatives from commerce and industry, medical and legal professions, trade unions and NGOs and the technical/scientific community. The **Pakistan** Environmental Protection Agency (PEPA) was also established under the framework legislation and was created for the primary purpose of administering and implementing its provisions, rules and regulations. The Pakistan Environment Protection Council has the power to direct government to prepare, promote and implement projects for the protection, conservation, rehabilitation and improvement of the environment, as well as the prevention and control of pollution and the sustainable development of resources. These directives can be instituted either at the Council's initiative or by public request.

In **Sri Lanka**, the *National Environmental Act* (No. 47 of 1980 as amended by No. 56 of 1989) established both a Central Environmental Authority and Environmental Council. The Central Environmental Authority is a corporate authority with executive functions within the field of environmental management. The Authority is empowered to control the administration and implementation of the governing framework legislation.

The Environment Ministries established in many South Asian countries including India, Sri Lanka and Pakistan, are responsible for implementing the frameworks for environmental laws and for formulating environmental policies. In addition, this far-

reaching scope of responsibility extends to overseeing the work of other ministries, departments and agencies relating to the environment. In the Maldives, for example, the Ministry of Environment is responsible for formulating rules and regulations regarding the environment in areas that do not have a designated government authority to carry out such functions.

Environmental agencies have been set up at the provincial level to assist in the implementation of national strategies and to improve the assessment and monitoring of resource use. They also help coordinate different sectoral agencies in addition to local authorities. Municipalities and local councils provide assistance in the execution of national environmental policies, as well as by initiating their own resource protection measures. Many local and provincial governments have formulated their own Local Agenda with 21 strategies for environmental management, which is often supported by the State. On a similar note provincial governments in Pakistan have begun preparing environmental strategies to complement the national one.

Many institutions have incorporated environmental concerns into their economic decision-making process through their Five-Year Plans. Often there are specific environmental sub-sections within a planning ministry. These provide environmental inputs into the National Plan following organised consultations with working groups from other sectoral ministries, including the environment ministry, as well as experts.

(ii) Example Box 2: Public Planning in South Asia

A National Environment Committee was established in 1989 in **Bhutan**, as part of the Planning Commission under the Royal Command of His Majesty the King. The Environment Secretariat was de-linked from the Planning Commission and promoted to an independent organisation functioning as the National Environment Commission (NEC) in 1992. The NEC is a high-level, cross-sectoral body composed of Ministers and officials from various sectors and has the responsibility of creating legislation, regulation and ensuring that the Royal Government's obligations under global environmental conventions are satisfied.

India has well evolved institutes at central, state, district and local levels and has established a National Environmental Council headed by the Prime Minster to control the direction of environmental matters. The higher echelons of the Council hierarchy represent a think tank for the creation and development of appropriate plans and strategies. Recently in 2003, a National Forest Commission has also been established to control forestry matters under the Chairmanship of a retired Supreme Court Judge. The Pimpri Chinchwad Municipal Corporation, a city near Mumbai, established an institutional structure to effectively involve citizens in a participatory way in the planning process of the city. This initiative was instituted with assistance from the International Council of Local Environmental Initiatives (ICLEI). A media campaign was launched to increase public awareness and meetings were arranged to discuss development issues. A stakeholder group was established, consisting of government, academics, media and

NGOs to review the inputs from the far-reaching community consultations, and to discuss issues of waste management and the concerns to improve slum areas.

In the **Maldives** in 1998, the environment was given an elevated status being combined with the then Ministry of Planning and Development to form the Ministry of Planning and the Environment. The premise for this move was based on the rationale that environmental considerations needed to be completely and efficiently integrated into development planning with the country. In 1998, environmental administration was transferred to the Ministry of Home Affairs, Housing and the Environment, which is responsible for developing all aspects of environmental policy and enforcement of legislation. It now administers and co-ordinates with other agencies and implements programs to increase public awareness.

In **Nepal**, for example, the National Planning Commission (NPC) must assess and approve all public environmental policies, programs and projects before they go into effect. As the NPC also plays a role in co-coordinating inter-sectoral activities, monitoring environment-related actions and providing a budget, this integrated role as overseer is very important. In both, **Nepal** and **India**, the development planning process now includes broad consultation between all levels of government. The Eighth Five-Year Plan in **Nepal** supported the creation of a high-level Environment Protection Council and advisory body with the Prime Minister as chair, to formulate policies, give directives and establish inter-ministerial coordination and monitoring related to environmental management.

The range of functions entrusted to Environment Ministries includes the creation and implementation of policy, the promotion of environmental considerations into development decision-making and the monitoring of the environment. The Environment Ministry provides technical advice on environmental issues, formulates environmental policy inputs, implements programs on environmental protection and enforces the laws and regulations for pollution control and resource management. The Minister usually reports directly to the parliament on the state of the environment. The Environment Minister also oversees the actions of the executive agency such as a Department of Environment (Bangladesh) or a statutory organisation (Sri Lanka) and monitors the activities of the other institutions and sectors that impact on the natural environment. These diverse functions are all effected within an overarching premise of promoting awareness of environmental matters.

These departments or agencies are typically responsible for standards-setting and Environmental Impact Assessment (EIA). In addition, these bodies have the crucial function of coordinating and controlling environment pollution through the issuing of licenses and desist orders, carrying out environmental inspections, monitoring verification and data collection and analysis as well as a public complaints and dispute settlement schemes. By keeping the natural environment under their constant review, these institutions provide a forum for public participation, which serves as a catalyst for promoting environmental education, training and research and is a vital for the dispersal

of information. Often, they are also charged with the implementation of international environmental agreements, which further exemplifies the critical role of these agencies in the environmental sphere.

The lack of specificity in the powers, functions and duties of these national environmental institutions and in some instances overlapping jurisdictions, have been a major source of conflict between them, resulting in constant institutional conflicts and the consequent weakening overall of environmental management systems. Thus particular inherent defects undermine the achievements and potential effect that these bodies can have for environmental protection and awareness issues.

Though conceived as an apex institution to integrate environment and development, these bodies have in practice been largely inactive and in several countries. Many of these agencies have not met at all or meet very infrequently, thereby negating the very purpose for which they have been established by law. Perhaps the reasons for not activating these consultative agencies lies in the size and constitution of these bodies, financial and other constraints as well as the use of the alternative and more informal consultative mechanisms. Despite a measure of regional cooperation on transboundary water allocation and water quality issues these nevertheless remain a problematic area in the South.

4. CONSTITUTIONS AND THE ENVIRONMENT

After the Stockholm Conference many countries of the world incorporated provisions relating to the environment to safeguard the natural resources and the pristine environment. South Asian countries in particular were in the forefront to amend their constitutions to facilitate the environment protection and its conservation in the region.

The Constitution of India is perhaps the first of its kind to provide for the protection and safeguard of the environment through the Directive Principles and the Fundamental Duties. Sri Lankan Environmental Management Policy originates from the country's supreme law, i.e. the Constitution. The 1978 Constitution recognises that the State shall protect, preserve and improve the environment for the benefit of the community (Article 24(14)), as principles of State policy. The Constitution also recognises that it is the duty of every individual in Sri Lanka "to protect nature and conserve its riches" (Article 28 (f)). Similar to other nations of the region, Bangladesh has also responded to the global call for the protection and conservation of her natural environment and ecology. The Constitution of Bangladesh asserts that it should be a fundamental responsibility of the State to attain, through planned economic strategies, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the people (Artlcle-15). Nepal‘s new Constitution of the Kingdom of Nepal, 1990, which arose following the period of political realignment in Nepal, imposes a duty upon the State to incorporate environmental matters into its policy making and implementation process.

(iii) Example Box 3: Constitution of Sri Lanka

Chapter VI, Article 28
The exercise and enjoyment of rights and freedoms is inseparable from the performance of duties and obligations, and accordingly it is the duty of
every person in Sri Lanka -
(a) - (c) ...
(d) to preserve and protect public property and to combat misuse and waste of public property;
(e) ...
(f) to protect nature and conserve its riches…

5. ENVIRONMENTAL LEGISLATION

In this region, governmental responses to the problems of environmental pollution took the form of legislative enactment to deal with the causes of environmental impacts, particularly industrial effluents and nuisance. Thus, in addition to new sectoral legislation to fill the more apparent gaps in national frameworks, comprehensive anti-pollution laws were enacted. Important examples are the *Water (Prevention & Control of Pollution) Act 1974*; the *Water (Prevention & Control of Pollution) Act, 1981*; the *1977 Pollution Control Ordinance of* ***Bangladesh;*** and the *1980 Central Environmental Authority Act of* ***Sri Lanka***. Despite the apparent diversity of emphasis enunciated in these legislative creations, the primary focus remained on pollution control.

Framework environmental laws are enacted to canvass the entire spectrum of cross-sectoral environmental issues. Recently this has incorporated an ~~"u~~mbrella" approach, a legislative technique for environmental management that establishes the basic legal principles without any attempt at codification. It normally entails the declaration of environmental objectives and policies, the establishment of the necessary and relevant environmental institutions, and the definition of the common procedural principles for environmental decision-making applicable to all sectors. In this latter respect, the legislation often covers such cross-sectoral issues as environmental impact assessment, environmental quality criteria and public participation in decision-making and implementation. **Sri Lanka**'s *Central Environment Authority Act* of 1980, and *The Environmental Protection Act, 1986 of India* are demonstrative of the broad range of areas that such framework legislation attempts to cover. Most recently, **Bangladesh's** *Environment Conservation Act*, *1995* has come into force within the same time frame as **Pakistan**'s *Environmental Protection Act*, 1997 and the *Environmental Protection Act, 1997* of **Nepal**.

Resource conservation legislation in the region incorporates a wide range of environmental management concerns, including water resources protection and conservation, forest laws, marine resources management, land use management, preservation of natural habitats and conservation of heritage. Most countries in the region have enacted laws specific to these issues and introduced innovations to make their enforcement more effective. However, existing defects in legislation make the

administration of conflicting demands on resources difficult to manage. In the countries of South Asia, the management of forests and forest resources has been given considerable priority.

(iv) Example Box 4: Forest Management in South Asia

In India, under the provisions of the *Forest (Conservation) Act, 1980* prior permission of the Central Government is essential for the diversion of forest land for non-forest purposes. Linked to this are the provisions in the *1986 Environment (Protection) Act*, which restrict the establishment of any new wood based unit, expansion and modernisation of such units, renewal of licenses for such units and construction of any infrastructure related to the setting up of new, as well as existing, wood based units. In **Nepal**, the government is encouraging user groups and village communities to participate in forest management and it has implemented a mandatory requirement that industries setting up in forest areas or using forest products must commission a detailed environmental impact assessment**. Sri Lanka** has set up national parks, nature reserves and sanctuaries to prevent the destruction of forest areas.

Environmental quality and anti-pollution regulations remain the most widely utilised legislative technique for pollution control, though several new approaches are evident in contemporary State practice. These laws have a wide ranging scope, as they typically canvass issues related to air quality, water, marine pollution, solid waste disposal and toxic materials management. Furthermore, this legislation establishes quality criteria, defines pollutants, sets permissible limits and regulates the suitability and effectiveness of compliance and enforcement methods. One of the most widely utilised techniques for environmental control is the system of authorisation (by permit, certification, licence) administered by government institutions.

In light of the fact that the substance of the framework legislation is less detailed than the former anti-pollution laws or the comprehensive environmental code options, the implementation of its principles inevitably requires further enabling legislation. The basic legislation can remain intact while the implementing frameworks are reformulated in response to changes in socio-economic and ecological factors. Similar provisions authorising specified government agencies to issue environmental quality criteria, standards and norms to control air, water and waste pollution exist in the legislation of **Bangladesh**, **India, and Sri Lanka**.

Legislation can also be an instrument for instituting novel approaches to dispute avoidance and settlement and promoting public participation at all levels in environmental decision-making and implementation. Such participation can be secured through the establishment of appropriate local level dispute mediation, conciliation and settlement institutions and the definition of "citizen rights" to enforce legislation. This latter aspect may become an important safeguard and increase government accountability, particularly where public agencies are remiss in their duties or have violated the law.

The effective implementation of environmental legislation presupposes the existence of appropriate institutional arrangements and processes. The sectoral approach to environmental management has had the effect of diffusing power and responsibility in diverse government departments (and in certain cases in local authorities) without any mechanisms for coordination. Jurisdictional overlaps and conflicts have inevitably arisen, thereby inhibiting not only the effective implementation of sustainable development policies, but also law enforcement. The major practical problems result from the difficulties in establishing an effective system of control and mechanisms to enforce the law.

6. ENFORCEMENT OF ENVIRONMENTAL LEGISLATION

Effective enforcement of environmental legislation is contingent upon the availability of adequate staff and financial resources, the administrative and political will of the enforcement agencies and the level of awareness of environmental laws. It is common, however, to find situations where responsibility for enforcement of laws is divided amongst a number of government agencies that pursue conflicting interests, thereby delaying or forestalling the implementation of these laws. In response, for enforcement to be effective, developmental planning processes have to be closely coordinated, with powers ideally vested in one apex agency.

Judicial activism and public participation have, in recent years, enhanced enforcement efforts of governments in implementing environmental laws. The courts are not only allowing the public to file public interest litigation for violation of environmental rights, but are also giving directives to the government to take corrective steps to rectify environmental damage. The imposition of fines and penalties on defaulting industries and closure of polluting units are examples of measures that have been frequently imposed by the courts.

The courts have also stressed the preeminence of the ―polluter pays" and precautionary ―prevention is better than a cure" principles as critical safeguards for sustainable utilisation of natural resources and for environmental balance. Judicial decisions in **Sri Lanka, India, Bangladesh** and **Pakistan** regarding environmental assessments for development projects have provided a much needed impetus for the enforcement of EIA legislation. It is also significant that in most cases the courts have accepted the principle of *locus standi* as a requirement in the promotion of public participation in the judicial process for environmental issues.

Each country has an environmental legislative framework to approach the resolution of the national environmental problems specific to the country. The International agreements are focused on atmosphere, hazardous substances, marine environment, terrestrial resources, nature conservation and transboundary pollution. The key principles followed in the international agreements include Sustainable Development, Intergovernmental Equity, Common but Differentiated Responsibilities, Prior Informed

Consent, the Precautionary Principle, the Polluter Pays Principle, and the concept of Permanent Sovereignty over National Resources.

7. ENVIRONMENTAL IMPACT ASSESSMENT

Economic development in developing countries has focused on immediate economic gains and, as such, environmental protection has not been prioritised. This primarily occurs because the economic losses from environmental degradation often manifest only long after the economic benefits of development have been realised. The past failure of development planning processes to take adequate account of the detrimental impacts of economic development activities, led to the advent of *environmental impact assessment (EIA)* processes. EIA was first employed by industrialised countries in the early 1970s. Since that time, most countries have adopted EIA processes to examine the social and environmental consequences of projects prior to their execution. The purpose of these processes is to provide information to decision makers and the public about the environmental implications of proposed actions before decisions are made.

Provision for EIA is made either in the national framework legislation or in subsidiary legislation. **Nepal** has attempted to harmonise sectoral legislation by formulating national EIA guidelines that identify the agencies responsible for reviewing the assessment report. Other countries in the region that have made EIA mandatory include **India, Sri Lanka, Bhutan, Maldives and Nepal**. In addition, such legislative sanction for EIA has the advantage of introducing greater objectivity in the decision making process. In the context of sustainable development, mandatory EIA also ensures the participation of stakeholders and the public in the EIA process, which brings cross-sectoral ideas and views into perspective and thereby enlightens the decision making process.

The need to integrate environmental considerations into national socio-economic planning is now widely recognised across the South Asia region. The EIA process has become the most common institutional mechanism for achieving such integration. EIA has become a crucial tool in guiding policy choices and has helped to create an environmental awareness amongst agencies involved in project implementation. The system of EIA has the capacity to minimise potential environmental damage or even prevent the occurrence of such problems at the preliminary stage of project formulation.

For many countries in the region an Initial Environmental Examination (IEE) or Environmental Impact Statement (EIS) has been made mandatory through the national framework legislation or the enactment of subsidiary legislation. **Nepal** has formulated EIA guidelines that involve the review of the Planning Commission, Environment Ministry as well as the agency implementing the project. **India** and **Sri Lanka** have both instituted a mandatory system of EIA for specified development projects.

(v) Example Box 5: Environmental Impact Assessment

The *Environmental Protection Act 1986*, in **India** has made Environmental Impact Assessments (EIA) mandatory for 29 categories of development activities, which has been facilitated by the creation of expert groups in the sectoral agencies to ensure a broad range of sectoral inputs to the process. These committees meet regularly to review and discuss proposals. Nepal harmonised their EIA legislation into National EIA Guidelines, which clearly name the National Planning Commission, the Environment Division and the relevant line ministries as the agencies responsible for reviewing the EIS.

The **Sri Lankan** Ministry of Environment has held that adequate and rigorous consideration of alternatives is central to any Environmental Impact Assessment process, which is only facilitated by the availability of sufficient information to permit a reasonable choice of alternatives to be made. At the conclusion of this wide-ranging and objective process, decision-makers are better equipped to design and implement an "environmentally friendlier" activity. In **Sri Lanka**, the EIA process has been designed to promote inter-ministerial and inter-sectoral coordination where sectoral ministerial representatives, as well as the private sector, formulate and review EIA activities, regulations and policies.

In addition to the critical importance of public participation in the EIA process the need to ensure consultation and active partnership among interested governmental and parastatal institutions is also imperative. Whether operating at the national or local level, all of these bodies have relevant expertise and practical experience to contribute to the EIA process. EIA has helped to ensure that the wide range of national, provincial/state, local authorities, scientific and technical sectors have all been given an opportunity to comment on proposed activities, thereby avoiding costly mistakes and facilitating inter-sectoral co-operation. The heart of the EIA is in the analysis of alternatives. This system aims to seek out the most appropriate project option in light of diverse considerations from both an environmental and socio-economic perspective.

The critical issues for EIA development in the South Asia region are consistency in application, which can only be obtained through centralised management, decentralised implementation and access to independent expertise. The EIA process must continue to focus on greater public participation in the process and improved access to information in order to make any such public involvement meaningful. Although incredible progress has been made in the development of an EIA legislative network in the countries of the region, the actual implementation of these provisions nevertheless remains problematic. In order to prevent circumvention of the crucial premise of the legislation, EIA procedures must not be regarded merely as obstructions to the goals of development.

8. ROLE OF THE JUDICIARY

The present judicial systems in India, Pakistan, Sri Lanka and Bangladesh represent an evolution from the traditional institutions established during the colonial period. The conventional role of the judiciary, being that of dispute resolution (civil jurisdiction) and

the trial and punishment of those charged and convicted of crimes (criminal jurisdiction), has evolved over a considerable period of time. The basic elements of a modern system of civil and criminal justice have been in operation in much of the sub-continent for more than a century and in Nepal at least since 1951, when the Interim Constitution was promulgated.

The Judiciary plays a crucial role in promoting goals of sustainable development. Judicial institutions serve as agencies for interpreting legislation relating to environmental issues, integrating emerging principles of law within the holistic paradigms of sustainable development, providing a coherent and comprehensive strategy for handling diverse sectoral laws into a cross-sectoral approach and ensuring effective implementation of legislation. This extensive scope of influence has been extended in recent years where the judiciary now safeguards an individual's fundamental rights to a satisfactory environment. The rule of law becomes particularly important, as regulations and procedures, which govern human activity, serve to limit conflicts arising from competing claims (social, economic and ecological) on scarce resources whilst also ensuring sustainable development. Thus crucial to the role of the judiciary is the need to strike a balance between the competing demands of industry and individuals within an overarching need to preserve a sustainable environment.

Connections and linkages between different forms of activity and their environmental consequences are subject to different interpretations and reflect the inherent complexity of these issues. Therefore the judiciary is called upon to resolve such issues without compromising the fundamental goals and rights of civil society. The structure of judicial institutions in different countries in South Asia has not been satisfactorily modified to provide for the requirements necessary to achieving sustainable development. In many countries the Supreme Courts have taken the lead in interpreting laws and giving directions, many of which have had a far-reaching impact on environmental management. The Supreme Court in India, for example, in recognising the role of environmental protection for the achievement of sustainable development and growth, has been establishing mechanisms for the institutionalisation of judicial direction in environmental matters. The Court has adopted and set procedures that become the guiding law for the subordinate courts in the country. The most important innovation has been the Public Interest Litigation that enables individuals and organisations to file a writ petition with the objective of protecting environmental resources and benefiting the affected people. The Supreme Court of India has also established specialised High Court benches known as ―Green Benches" to deal specifically with environmental management issues. Similarly, in Pakistan the superior courts exercise jurisdiction conferred under Articles 184(3) and 199 of the Constitution. Nepal‘s 1997 Environmental Protection Act continues with this trend of judicial regulation by providing for the designation of a Prescribed Authority to administer the filing of environmental cases. However, appropriate rules for designating such an authority have not yet been formulated and environmental cases continue to be brought before subordinate courts.

An active judiciary has the potential to ingrain the rights of people to enjoy a certain level of environmental protection and to seek judicial intervention where these are violated.

The judiciary may also act as a check on government policies that disrupt fragile ecological balances and generate awareness and consciousness amongst policy makers through court verdicts and orders. However, there is a need for specialist environment courts that can facilitate more consistent and expeditious environmental decision-making. These courts would reduce the number of cases brought before the Supreme Courts and High Courts and, as a single combined jurisdiction would be less expensive than a network of separate tribunals, administrative costs would also be limited.

In **Bangladesh, India, Sri Lanka** and **Pakistan** the Supreme Courts have broadly interpreted the "fundamental right to life" element contained in each of their constitutions. This approach entrenches the rights of the public to a healthy and protected environment into a solid legal foundation. The interpretation of constitutional rights was broadened in Bangladesh in the 1995 Supreme Court decision of *Dr. Mohiuddin Farooque* v. *Secretary*, *Ministry of Communication*, *Government of the Peoples' Republic of Bangladesh.* This case involved a petition against various Ministries and other authorities for failing to fulfil their statutory duties to mitigate air and noise pollution caused by motor vehicles in the city of Dhaka. The substance of the petition was that although the Constitution of Bangladesh contained no specific right to a safe and healthy environment, this right was part of the explicit "right to life" enshrined in the Constitution. The Court agreed with this argument and, as such, the rights to a protected environment are implicitly recognised as being inherent to the right to life. This interpretation was supported by constitutional prohibitions on actions detrimental to life, body or property. Similarly, in Pakistan the courts have broadly interpreted the 'right to life', stating that persons must not only be able to sustain life, but also to enjoy it, which necessarily incorporates one's right to a healthy and sustainable environment.

Courts have applied the public trust doctrine in regard to the management of natural resources and the environment, and in some states have given consideration to the concept of inter-generational and intra-generational equity. In this respect the administration of environmental issues and litigious matters is approached with firm consideration for maintaining the environment for future generations. In the 1988 Supreme Court of **India** decision of *Rural Litigation and Entitlement Kendera* v. *State of U.P.*, the Court ordered a cease to unauthorised and illegal mining in the Dhera Dun District, which was adversely affecting the ecology of the region. The Court specifically remarked that the area was a gift of nature to mankind and a bequest of the past generations to the future.

The responsibility and liability of the industry has been emphasised by the judicial support for the polluter pays principle. This principle was specifically addressed in India with the 1996 Supreme Court decision *Indian Council for Enviro-Legal Action* v. *Union of India*, where an action was brought to stop and in an effort to remedy the pollution caused by several chemical industrial plants in Bichhri village, Udaipur District, Rajasthan. The Court noted the finding in the *Oleum Gas Leak Case II* under which an enterprise that is engaged in a hazardous or inherently dangerous activity which results in harm to anyone, is strictly and absolutely liable to compensate all those who are affected by the accident. This rule deviated from the exceptions of strict liability set forth in the

definitive case of *Rylands* v. *Fletcher* to accommodate the particular conditions in India. The Court also strongly endorsed the polluter pays principle, under which the financial costs of preventing or redressing damage lie entirely with those who are responsible for the pollution. This principle also played a role in another 1996 Supreme Court of India decision, *Vellore Citizens Welfare Forum* v. *Union of India*. In this instance the Court found that although the Respondent leather industry was a major foreign exchange earner for India and employment provider, this did not authorise the destruction of the ecology, environmental degradation or the creation of health hazards as a necessary incident of the industry. The Court ordered the Central Government to establish an authority to deal with the situation created by the tanneries and other polluting industries in the State of Tamil Nadu. This authority was to implement the precautionary and polluter pays principles and identify the losses to the ecology, environment and to individuals and families who had suffered because of the pollution. Upon determination of such losses the authority was to assess compensation by reference to the costs necessary to reverse the environmental damage and compensate those who had suffered.

Thus the emergence of a clear judicial concern for the integration of environmental concerns in the sphere of development and decision-making has been apparent in many recent cases. The 1988 Supreme Court of **India** decision, *M.C. Mehta* v. *Union of India and others*, provides an example of the advancement of the concept of sustainable development. Here the Court observed that while it was conscious that its decision to prevent tanneries, which were polluting the River Ganga, from operating until they installed primary effluent treatment plants, could bring unemployment, the decision to defend and improve the environment for present and future generations had become an imperative goal. The precautionary principle was applied in **Pakistan** in the 1992 Human Rights case of the Supreme Court, *Ms. Shehla Zia and others* v. *WAPDA.* The Court advocated the precautionary principle for the legal system, including both the judiciary and the various regulatory agencies, when responding to scientific uncertainties in the evidence before them. It was emphasised that a policy of sustainable development should be adopted to strike a balance between economic progress and prosperity and to minimise possible hazards.

Great advances have also been made in the region in relation to access to justice. This has been largely facilitated by providing wider standing for aggrieved parties to seek redress and the expansion of substantive and procedural matters related to public interest litigation. The judiciary has extended the eligibility for public interest standing so that weaker sections of society are not denied access to environmental justice, particularly in respect of a subject matter of great public concern. The 1996 Supreme Court of **Bangladesh** (Appellate Division - Civil) decision in *Dr. Mohiuddin Farooque* v. *Bangladesh*, *Represented by the Secretary, Ministry of Irrigation, Water Resources & Flood Control*, extended the interpretation of "any person aggrieved" in the Constitution of Bangladesh to include not just individually affected persons, but also to the public in general, as a collective and consolidated personality. In this case, the petitioner, the Secretary General of the Bangladesh Environmental Lawyers Association, had filed a petition on behalf of a group of people in the district of Tangail whose life, property, livelihood, vocation and environmental security were seriously threatened by the

imposition of a flood control plain. The Court concluded that the petitioner should be given *locus standi* to maintain the writ position, as the cause espoused by the Association *bona fide*, both in respect of fundamental rights and constitutional remedies, was a cause of an indeterminate number of people in respect of a subject matter of great public concern.

The public's right to access information was emphasised in **India** in the case of *Bombay Environment Action Group, Shaym H.K. Chainani Indian Inhabitant, Save Pune Citizen's Committee* v. *Pune Cantonment Board*, a 1986 decision in the High Court of Judicature, Bombay. In this case the Court upheld the right to information and the rights of recognised social action groups to obtain such information. This decision was founded on the rationale that the disclosure of information in regard to the functioning of the Government and the right to know, flows from the right of free speech and expression guaranteed under the Constitution. The Court also determined that "people's participation in the movement for the protection of the environment cannot be over-emphasised." Thus to stimulate public participation people need education, information and the right to express their concerns. The Petitioner, M.C. Mehta in the 1992 Supreme Court of India decision, *M.C. Mehta* v. *Union of India and Others*, asked the Supreme Court to issue a direction to cinema halls, radio stations and schools and colleges to spread information relating to the environment. The Petitioner made this application on the grounds that the Indian Constitution required every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures. To fulfil these environmental obligations, the Petitioner argued that people need to be better educated about the environment. The Court agreed and noted that it was the Government's obligation to keep citizens informed about such matters, and hence issued the requested directions.

9. SOUTH ASIA COOPERATIVE ENVIRONMENT PROGRAM

The South Asia Co-operative Environment Program (SACEP) is an inter-governmental organisation established in 1982 by the Governments of South Asia to promote and support the protection, management and enhancement of the environment in the region.

The Secretariat consists of the Director General and professional, administrative and supporting staff. The Director General is appointed in rotation from the member states in alphabetical order for a period of three years. The preeminent function of the Secretariat is to assist the Governing Council, the Consultative Committee, National Focal Points and Subject Area Focal Points in the discharge of their duties and responsibilities. It is based in Colombo and the Sri Lankan Government provides financial support for its existence.

The SACEP is also acting as the Secretariat for implementing the South Asian Seas Program, which was designated in 1983 as the ninth UNEP's Regional Seas Program. Bangladesh, India, Maldives, Pakistan and Sri Lanka are the countries participating in

this program and have each ratified the Action Plan in 1995 for the protection and management of the coastal and marine resources in the region.

SACEP currently receives three types of financial assistance for its activities:

- Annual country contributions from the member countries on a agreed scale of assessment
- The hosting and support facilities provided from the Government of Sri Lanka as the host country of the Secretariat
- Bilateral - NORAD, SIDA, & the Netherlands Government

Afghanistan, **Bangladesh**, **Bhutan, India, Maldives, Nepal, Pakistan** and **Sri Lanka**, are the eight participatory countries that have ratified the Articles of Association of SACEP. All member countries of SACEP belong to the developing world and five have been classified as amongst the least developed. Most of these nations share similar environmental problems stemming from poverty and its consequences on natural resources. According to the World Bank, during the past decade South Asia has been the second fastest economically growing region in the world. Consequently, South Asian efforts at increased production have imposed a mounting pressure on natural resources and the environment. Significant natural resource concerns in South Asia include the depletion of water quality and quantity, the reduction of forests and coastal resources and soil degradation resulting from nutrient depletion and salinisation.

The primary objective of SACEP is to promote and support the protection, management and enhancement of the South Asian environment. To achieve this aim there is a great emphasis on an approach that incorporates an individual, collective and co-operative level of involvement from all participatory countries. This action takes place within the context of encouraging the judicious use of the resources of the environment with a view to alleviating poverty, reducing socio-economic disparities and improving the quality of life of the people

The functions of SACEP are to promote co-operative activities that would be beneficial to member countries in priority areas of mutual interest. In addition SACEP provides a forum to facilitate exchange of knowledge and expertise and provide local resources for implementation of priority activities while mobilising maximum constructive and complementary support from donor countries and agencies.

The Governing Council is responsible for determining the policies and programs of SACEP and it oversees these activities by meeting regularly to review the ongoing programs and to endorse new recommendations put forward by the Secretariat. It consists of one representative from each of the member states, who will be of ministerial rank. Since becoming a legal entity in 1982, SACEP has held eight GC Meetings and the following table indicates the important initiatives and decisions taken at these meetings. See table on pp.40-43.

The Consultative Committee comprises the representatives of the diplomatic missions in Colombo and the Secretary of Ministry of Forestry and Environment of Sri Lanka. It is responsible for facilitating the implementation of policies, strategies and programs approved by the SACEPs Governing Council. The Consultative Committee meets regularly to provide guidance to the Secretariat in its activities and at the time of May 2001, 79 Consultative Committee Meetings had been held. Presently the Indian High Commission in Sri Lanka is the Chair of the Committee.

Each Member State has designated a National Focal Point to facilitate the work of the Secretariat and to function as the main communication link between the Secretariat and the respective country. National Focal Points are expected to implement and monitor national programs in co-operation with the Secretariat.

The Subject Area Focal Points are expected to co-operate with the Secretariat in project identification, formulation, implementation and monitoring. The country that is responsible for a particular subject area designates a centre of excellence in that subject and appoints a liaison officer. The member countries were assigned as the focal points for the following subject areas at the 7th GC Meeting of SACEP in 1998:

Bangladesh: Management of Freshwater Resources
India: Conservation of Biodiversity, Energy and Environment; Environment Legislation, Education & Training; Waste Management
Maldives: Management of Coral Island Ecosystems; Sustainable Tourism Development
Nepal: Participatory Forestry Management,
Pakistan: Air Pollution, Desertification, Science & Technology for Sustainable Development
Sri Lanka: Sustainable Agriculture & Land Use; Sustainable Human Settlement Development

Since its inception in 1982, SACEP has initiated a number of projects, which aim to build upon and improve national capacity to manage environmental issues. The overall focus of SACEP‘s activities includes capacity building and institutional strengthening; conservation and sustainable use of biodiversity; ecosystem conservation and management; environmental information and assessment; and education and awareness raising. SACEP‘s members include Afghanistan, Bangladesh, Bhutan, India, Iran, Maldives, Nepal, Pakistan, and Sri Lanka.

The formulation of the Regional Seas Program was a major achievement under the aegis of SACEP and it is one of the few major transboundary environmental programs of South Asia. Under this program a South Asian Seas Action Plan was also prepared in addition to national and regional overviews and action plans. The implementation activities relate to integrated coastal zone management; development of national and regional oil and chemical contingency plans; and the protection of the marine environment from the impacts of land-based activities.

Another major program undertaken by SACEP has been the improvement of the legal and institutional frameworks in the countries of the sub-region, which has been facilitated by technical assistance from UNEP Regional Office for Asia and the Pacific. Under this program, national workshops were organised in Bangladesh and Nepal covering environmental law from both national and international convention implementation perspectives. In the Maldives, support was given for a National Planning Meeting to develop National Environmental Legislation. In Sri Lanka, activities were carried out in development of regulations; preparation of a model statute; establishment of environmental standards; preparation of the state of environment report; training programs; and an environmental awareness program for children. SACEP launched the Private and Public Cooperation Initiative to promote cooperation between governments and the private sector. With the support of UNEP and NORAD under this initiative, a Regional Seminar on Cooperation for the Promotion of Environmentally Friendly Business Practices is being convened.

10. SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION

The South Asian Association for Regional Cooperation (SAARC) was established in 1983 with its headquarters in Katmandu. It includes the countries of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. SAARC has a particular focus on economic cooperation although it also covers many aspects of regional cooperation (including environment). SAARC has steadily grown and, as a result of recent coordination initiatives between the two programs (SAARC and SACEP), its environmental activities are complementary to those of SACEP. SAARC has established technical committees in many fields. The Committee on Environment was given the status of a Technical Committee in 1992, the year in which a special session of this Committee was held in Pakistan to prepare modalities and programs of action. The implementation of the recommendations of the Regional Study on Greenhouse Effects has also been mandated to this Committee.

Countries of the sub-region are also participating in four transboundary efforts being promoted by the World Bank in Asia and the Pacific. URBAIR and the Two-Stroke Vehicle Engine Initiative address the problem of the rapid degradation of air by pollution in South Asia‘s largest cities. The Bay of Bengal Environment Program funded by GEF and jointly implemented with FAO addresses fisheries research, environmental emergencies, large marine ecosystems and coastal zone management in and around the bay. Both South and East Asian countries are involved in this program. The South Asia Development Initiative seeks to improve regional cooperation in the most impoverished parts of South Asia (Bangladesh, Bhutan, Nepal and eastern India) particularly in the areas of water resource management, energy development and trade and transport and commerce. A program for the preservation of Cultural Heritage in South Asia is being implemented in Bangladesh, India and Nepal to promote active involvement and financial support of the public, NGO, and private sectors to rehabilitate and protect national heritage sites.

The Third SAARC Summit held in Katmandu in the year 1987 decided to commission a study entitled "Causes and Consequences of Natural Disasters and the Protection and Preservation of the Environment". National Studies were undertaken and subsequently consolidated into a Regional Study, which was approved by the Sixth SAARC Summit in Colombo, 1991. The recommendations of the above Regional Study were considered by the Committee on Environment (held in February 1992), which identified the need for immediate action facilitated by measures for strengthening the environment management infrastructure; programs on environmentally sound land and water use planning; a research and action program on mountain development in the Himalayan Region; a coastal zone management program; a SAARC forestry and watershed program; programs on energy and environment; pollution control and hazardous waste management programs; a SAARC co-operative program for biodiversity management; programs for public participation in resource management; information exchange on low cost and environmentally sound habitat technologies; and the establishment of a SAARC relief and assistance mechanism for disaster and regional cooperation on the development of modern disaster warning systems. SAARC also presented a common position paper to the Fourth World Conference on Natural Disaster Reduction.

The Fourth SAARC Summit held in Islamabad in 1988 concluded that a joint study be undertaken on "Greenhouse Effect and its Impact on the Region". National Studies prepared by member states were consolidated into a regional study, which was approved by the Seventh SAARC Summit. A SAARC Environment Ministers Conference was held in New Delhi in April 1992 to evolve a joint position on the issues related to the UN Conference on Environment and Development (UNCED). A draft common SAARC position on Climate Change issues on the eve of the 1998 Buenos Aires meeting on Climate Change was adopted at the Meeting. The common SAARC position highlighted the need for determination of equitable emission entitlements as well as the transfer of new and additional financial resources and environmentally sound technologies on concessional terms to developing countries. It expressed concern at the attempt of some Annex-I Parties (Industrialized Countries) to link ratification of the Kyoto Protocol to the introduction of new commitments for non-Annex-I parties, which will only delay the Protocol coming into force.

The Heads of State or Government expressed their deep satisfaction at the positive outcome of the Environment Ministers' Conference held in Male' in October 1997, and called for the effective and early implementation of the SAARC Environment Action Plan. In this context they welcomed the offer of Maldives to prepare a feasibility study on the establishment of a Coastal Zone Management Centre. The Heads of State or Government also committed their governments to prepare National Environment Action Plans and State of the Environment Reports before the end of 1998

SAARC Environment Ministers, who met in Colombo from 30 October to 1 November 1998 for their fourth annual Conference, adopted a common environment program for the region as a follow up on the SAARC Action Plan on the Environment. Chandrika Bandaranaike Kumaratunga, President of Sri Lanka and current Chairperson of SAARC, inaugurated the Fourth SAARC Environment Ministers‘ Conference. In her inaugural

address, President Kumaratunga highlighted the environmental dimensions of development that would guide the governments in the region along a sustainable path to economic growth. She underscored the fact that SAARC region, which is home for nearly one fifth of the world population, was confronted with increasing levels of poverty, ill health, illiteracy, social instability and continued environmental degradation.

The SAARC Environment Ministers agreed to direct their focus to a single theme in each of their future meetings. They also agreed that Bio-Diversity should be the theme for the year 1999. The Government of India will host a Meeting on the trans-boundary movement of hazardous wastes and dumping of such wastes in the region by other countries. This Meeting would examine the implications of the effect of the Basel Convention for the SAARC countries and would also explore the possibility of harmonising policies and procedures with regard to hazardous wastes.

The Committee on Environment was designated as the Technical Committee on Environment (TC04) commenced functioning on 1st January 1993. TC04 has been instrumental in identifying measures for immediate action within the recommendations and decided on a number of modalities for their implementation. These include: improving climate monitoring capability through networking arrangement and through SAARC Meteorological Research Centre (SMRC); developing climate change and sea-level rise scenario through country specific studies and sharing of information data in this respect; making available to member states expertise on climate research and monitoring Greenhouse Gas emissions; identification of training and research institutions and ongoing programs; exchange of information and data; exchange of experience on strategies for developing, mitigating and adaptive responses to climate change.

TC04 also covers topics such as: Approaches to Environmental Legislation, Regulations and Standards in SAARC countries; Rehabilitation of Degraded Lands; a Training Course on Wetlands Assessment and Management; a Workshop on Alternate/Renewable Energy and Workshop of SAARC National Experts on Climate Change. The urgent need to establish a networking approach through identified nodal points/institutions has also been stressed.

11. REGIONAL AGREEMENTS

In the last several years, the South Asia region has taken steps towards establishing regional standards or norms for environmental protection through treaties, conventions and agreements.

Agreement on Establishing the SAARC Food Security Reserve (SFSR)

During the Third SAARC Summit (Katmandu, 1987), an Agreement on establishing the SAARC Food Security Reserve was signed. The Agreement, which came into force on

12 August 1988, provided for a reserve of foodgrains for meeting emergencies in member countries. The size of the reserve at present stands at 241,580 tonnes.

The SAARC Food Security Reserve Board comprises representatives from each member country and meets annually. The primary function of the Board is to undertake a periodic review and assessment of the food situation and prospects in the region including factors such as production, consumption, trade, prices, quality and stocks of foodgrains.

Agreement on SAARC Preferential Trading Arrangement (SAPTA)

The Ministers of Member States signed the Agreement on SAPTA on 11th April 1993, during the Seventh SAARC Summit. The initiative towards establishing SAPTA was taken during the Sixth SAARC Summit in Colombo in December 1991. This Agreement is an umbrella framework of rules providing for the step-by-step liberalisation of intra-regional trade. It envisages periodic rounds of trade negotiations for exchange of trade concessions on tariff, para-tariff and non-tariff measures.

SAPTA contains provisions giving Special and Favourable Treatment to the Least Developed Countries (LDCs) in the SAARC region. Additional measures in favour of LDCs are incorporated in Annex-I of the Agreement. Provisions for safeguard action and balance of payments measures are also incorporated in the Agreement to protect the interests of Member States during critical economic circumstances.

The Agreement on Preferential Trading Arrangement (SAPTA) signed in Dhaka on 11th April 1993 has accelerated the process of trade and economic cooperation in the region.

Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia

The declaration recognises that there is a great possibility for increased air pollution and consequential phenomena due to the concentration of pollutant gases, acid rain or acid deposition. This declaration also implicitly recognises the impacts of such environmental problems upon on the health of humans and other living organisms in all our countries due to these man made and natural causes. In light of the potential for increases in transboundary air pollution as a corollary of air pollution in each country, the declaration states that countries shall continue the process in stages with mutual consultation to draw up and implement national and regional action plans and protocols based on a comprehensive understanding of transboundary air pollution issues. It declares that in pursuit of the above, institutional structures at the national level and countries themselves shall use the good offices of regional, international bilateral and multilateral agencies in this endevour.

12. IMPLEMENTATION OF GLOBAL CONVENTIONS

Over the last decade countries in the South Asia region have increasingly become signatories to international environmental agreements. Participation in these international agreements has also carried with it the obligation to institute adequate national measures for their implementation. Current developments demonstrate an increasing use of institutional and legislative mechanisms for this purpose. Recent environmental accords including the Montreal Protocol on Ozone Depleting Substances, the Biological Diversity and Climate Change Conventions, The Basel Convention, CITES and Convention on Migratory Species, impact upon a wide range of national interests and involve the participation of several national and sub-national administrative bodies.

Legislation has served as an effective instrument for implementing the obligations in a co-ordinated and cohesive way. To allow for the flexibility necessary for creating such co-ordinated administrative regimes, new environmental legislation usually specifies the principal concepts, obligations, rights and duties in regard to each Convention and leaves the detailed institutional arrangements to be specified in regulations. Many countries in the region have become parties to many of the international environmental instruments of global significance, but implementation of these conventions into domestic legislation has not been encouraging thus far. However, despite this initial reluctance this trend has slowly been changing.

At the national level, there is still a need for better scientific assessment of the ecological linkages between the conventions, identification of programs that have multiple benefits and enhanced public awareness raising for the conventions. Only then will the impetus of implementation be stirred.

13. CONCLUSION

South Asia today stands at a crossroad. A decade after Rio, it is still ridden with poverty and natural resources degradation. On the other hand, immense latent potential exists within the member countries. There is a broad consensus on the thematic priorities of poverty eradication, managing population growth, conserving natural resources and building macro-economic stability. However the challenge is for more action and accountability at various levels.

On the social front are the unique diversity of traditional values, arts, crafts and cultural practices, besides modern industrial products, services and a pool of contemporary brainpower. On the environment front the sub-region is endowed with approximately 15% of the known biological wealth of the world. Finally on the economic front, besides being the second fastest growing region in the world, the sub-region also has the largest consumer base. The political will for cooperation supported by a robust operational mechanism can transform the sub-region into a strong and sustainable entity within the global community.

SOUTH ASIA ENVIRONMENTAL FACT SHEET

COMPARATIVE TABLE							
ITEMS	**BANGLADESH**	**BHUTAN**	**INDIA**	**MALDIVES**	**NEPAL**	**PAKISTAN**	**SRI LANKA**
Constitutional Status on Environmental Protection	Protection of monuments and heritage, right to protection from actions detrimental to life	Does not have a constitution.	Duty of the state and citizens to protect environment. After 73rd and 74th Amendment L S G s given executive powers on Environmental issues.	No direct reference to environment.	Duty of the state to protect environment, wildlife, forest and vegetation.	Environmental pollution and ecology brought in the concurrent legislative list in 1993.	Duty of the State and every person. After 1987, Amendment Provincial govt. & executive power to protect environment, nature and its riches.
Major Environmental Laws	Environment Conservation Act, 1995; Forest Act, 1927; Agriculture & Sanitary Improvement Act, 1920; Embankment and Drainage Act; and about 180 other laws having bearing on environment.	Environment Assessment Act – 2000; Forest & National Conservation Act, '95; and Mines Act 1997 address environmental issues	Environment Protection Act, 1986; Pollution Control laws and a plethora of approx. 200 environment-related enactments.	Law on Protection and Preservation of Envt.'93. Law on Fisheries '87. Law on Coral Mining '78, EIA guidelines and several related laws in operation.	Environment Protection Act, 1997 and about 25 other environment-related laws	Pakistan EPA 1997 and a web of other environment-related enactments.	National Environment Act '80; NEPA and Forest Conservation Act. Coast Conservation Act also in existence.

ITEMS	BANGLADESH	BHUTAN	INDIA	MALDIVES	NEPAL	PAKISTAN	SRI LANKA
Institutions Directly Responsible for implementation.	Ministry of Environment and Forest (MOEF)-created in 1989, Sectoral ministries/ departments	National Environmental Commission	Ministry of Environment and Forest (MOEF)-created in 1980, Sectoral ministries & Pollution Control Boards (both at State and Centre levels), State Department of Environment	Ministry of Planning Environment; National Commission for the Protection of the Env't and Ministries such as Planning, Human Resources and Envt. Fisheries etc. are responsible for implementation.	Ministry of Population and Environment; Environment. Protection Council; National planning Commission; sectoral ministries eg. Forest, Industries etc.	Ministry of Environment; Apex body-Central Environment Protection Authority. Local authorities oversee the local matters.	Ministry of Environment, Central Environmental Authority
Environmental Tribunals			Acts provide for Tribunals and Appellate Authority. The forest yet to start.			The EPA provides for Environment Tribunals which are to have exclusive jurisdiction to try serious violations.	

ITEMS	BANGLADESH	BHUTAN	INDIA	MALDIVES	NEPAL	PAKISTAN	SRI LANKA
Environmental Policies, Strategies and action Plans	National Environment Policy adopted in '92. Forestry Master Plan in '93 and National Conservation Strategy '92 & Envt'al Management Action Plan prepared in '96.	Environment policies include Paro Resolution on Environment and Sustainable Development, Bhutan's Sustainable Development Strategy, Framework Guidelines for EIA developed in '92.	No Comprehensive Environment Policies or Action Plan brought out so far but there are sectoral policies on pollution, land use, agriculture, forest, industrial etc. National Conservation Strategy on Environment and Development, 1992	No policy or action plan has been brought out so far but as a member of the Alliance of Small Island States (AOSIS), is working to address ocean level rise.	Forestry Master Plan, 1988. National Conservation Strategy, 1988 in operation. National Envt'al Policy Action Plan prepared in 1992.	National Conservation Strategy of Pakistan, Five Year Plans incorporate principles of sustainability	National Conservation Strategy adopted in '88 & National Envt'al Action Plan adopted in '91 National Policy on Industry and Env't issued in '96. National Forest policy adopted in 1996 Coastal Zone Mgmt Plan '90 – under revision.
Judiciary	The SC exercises writ jurisdiction. Locus standi widened: right to healthy environment is declared a Fundamental right but the Constitution bars the courts to pass stay orders stalling development projects.		The SC and HCs have been instrumental in developing PIL, providing effective remedies & developing environmental jurisprudence. Right to healthy, ecologically balanced environment declared as a Fundamental Right.	Role not very significant.	Exercises writ jurisdiction. Locus standi widened to deal with PIL's.	The SC and HCs exercise writ juris. Locus standi widened to deal with PIL and suo moto actions. Right to life expanded to protect people from envtal hazards; Right to clean and unpolluted water a FRt.	The SC and Court of Appeals exercise writ jurisdiction. Locus standi widened to hear PILs.

STATUS OF MAJOR GLOBAL ENVIRONMENT CONVENTIONS IN SAARC REGION

Country Status – Ratification
(* = Accession)

Country	CBD	Ramsar	UNCCD	UNFCCC	Kyoto Protocol	Vienna Convention/ Montreal Protocol	Basel Con-vention	CITES	CMS (came into force)
Bangladesh	3/05/94	21/09/92	26/01/96	15/04/94		1990* /1990*	1/04/93*	20/11/81	
Bhutan	25/08/95			25/08/95					
India	18/02/94	01/02/82	17/12/96	1/11/93		1991* /1992*	24/06/92	20/07/76	1982
Maldives	9/11/92			9/11/92	30/12/98*	1988* /1989	28/04/92*		
Nepal	23/11/93	17/04/88	15/10/96	2/05/94		1994* /1994*	15/10/96*	18/06/75*	
Pakistan	26/07/94	23/11/76	24/02/97	1/06/94		1992* /1992*	26/07/94*	20/04/76*	1/12/87
Sri Lanka	23/03/94	15/10/90	09/12/98	23/11/93		1989* /1989*	28/08/92*	4/05/79*	1/09/90

CHAPTER IV

COUNTRY PROFILE

1. GEOGRAPHICAL

Nepal is situated in the Central Himalaya at $26^0$22‘ to $30^0$27‘ N Latitude, and $80^0$4‘ to $88^0$12‘ E Longitude between two large countries: the People‘s Republic of China in the North and India in the East, South and West. It represents only 0.3 percent of the total Asian landmass.

The country is roughly rectangular in shape, with an average length of 885 Km East to West and non-uniform width of 193 Km North to South. An important location feature of the country is the sharp contrast in elevation and climate. Of the total area of 147,484 Km^2, 28 percent lies above 3000 m, 61 percent between 300 – 3000 m, and the remaining 11 percent below 300 m. Consequently, there is a sharp zonation in climate types with distinctive natural vegetation and cultivated crops. Slightly over 80 percent of the land is covered by rugged hills and mountain out of which over 20 percent is high mountain zone, between 2200 – 4000 m with long, straight and steep slopes and narrow valleys. These areas are sensitive to erosion. The High altitude Himal Zone, above 4000 m, which is about 23 percent of the Kingdom is mostly snow covered Himalaya region.

The Terai and inner Terai region is dominated by deciduous vegetation. The main species are sal (Shorea robusta), khair (Acacia Catechu), simal (Salmaria malacarica), and sisoo (Dalbergia Sisoo). The landscape between 1000 m and 2000 m in the hill regions is dominated by species such as chillaune (Schiima walichii), katus (Castonpis indica), species associated with bans (Dundro calamas), uttis (Alnus nepalensis), and guras (Rhododendron arborium). Oak, alder, poplar and magnolia are found on higher ridges. Above 4,000 m, the vegetation is subalpine. Rhododendron, juniper, and birch are common here, together with a variety of alpine plants.

Over 80 percent land area of the country is drained by three major river systems, thus producing three principal river basins. These basins are Koshi basin in the east, the Karnali basin in the west and the Gandaki basin, which is a transition zone. These basins constitute the centres of cultural and political development in the country. The principal rivers of each of the three drainage systems originate in the Trans-Himalayan region and flow south fed by numerous tributaries arising in the hill region.

The Karnali river system in the west is the largest river system in Nepal. With an average runoff of 18,000 ft^3 /sec the total hydropower potential from the Karnali is estimated at 32,000 MW. The Gandaki has a runoff of 10,000 ft^3/sec and an estimated power potential of 21,000 MW.

Most of Nepal falls within the monsoon climate area, altitude being the major determinant of the division of Nepal into climatic regions. Within short vertical distances, the climatic conditions tend to change radically.

In Nepal, four broad climate types can be recognized:

1. *A humid tropical climate* prevails up to an altitude of 100m. In the Terai region, the southern parts of the country characterise this climatic type. Summers are hot with temperature rising up to 37ºC. Winters are cool with mean temperature of 12ºC. The summer rainfall (June to September) varies between 1,700 mm and 900 mm.
2. *A moist subtropical climate* characterizes the hill region between 1,000 and 2,500 m. In summers the temperature reach to 32ºC. Winters are mild but not very severe.
3. *A temperate to cool temperate climate* prevails between 2,500 – 4,000m. Summers are short and cool; winters are severe with the night temperature dropping below freezing point.
4. *Alpine and arctic climates* are found above 4,000 m, which is the upper limit of forest.

2. POPULATION

Nepal is predominantly a country of villages. At present the 28,000 villages or settlements in the country have been organized into 4,048 local administration units. Only 33 of these are recognized municipal areas and therefore by definition –urban" although not all display distinctive urban characteristics. The 33 municipal areas harbour, at present, about 9 percent of Nepal‘s population.

Average population density is estimated at just over 145.6 people per square kilometre. This is relatively high for a country where the distribution pattern of natural resources as well as socio economic development is uneven. Environmental degradation is quite obvious where population pressure exceeds the capacity of the land.

Geographically, there is an uneven population distribution, attributed to disparity in income and social development. Only 7.5 percent of the population live at an altitude between 10,000 feet to 13,000 feet. About 46 percent live in the mid hill region. The low land Gangatic plain called the Terai in the South provides livelihood to another 46.5 percent of the population. At present, an estimated population of Nepal is about 21.42 million, and with the current growth rate of 2.66 percent a year with the doubling time of only 26 years.

Unlike many other developing countries, Nepal started modernisation only very recently, and under relatively unfavourable circumstances. With virtually zero physical infrastructure for modern development, limited exploitable natural resources, a small skilled labour force, and a landlocked situation, options for rapid development have been

very limited and choices uncertain. Most people who have lived in the hills and mountain areas have survived in a precarious balance with the fragile environment. Population increase and employment which is dependent on agriculture have retarded economic growth and created a new group of people living below the poverty line.

Due to its geography and low level of economic development, economic forces and development are closely interconnected in Nepal. The past 40 years experience has clearly shown that the environment and economy are dovetailed components of national development. In many respects, the future economic development of Nepal will be greatly facilitated if natural resources and environment are better managed, however it will be severely constrained if the resources and environmental quality are allowed to deteriorate further. Deteriorating environment has increased the difficulties of poverty eradication, and conversely the failure to overcome poverty has exacerbated environmental problems. More and more people are finding difficulty in finding natural resources which were previously easily available to them. Especially to the predominant agricultural population, the importance of the continued availability of diversified natural resources which directly affect soil fertility, water availability, and productivity of farm resources can not be overemphasised.

Over the years, environmental problems such as increasing loss of topsoil, deforestation, water shortage, floods, degradation of agricultural land, forest, and pastureland has increased considerably. Special characteristics of mountain areas such as fragility, diversity, inaccessibility, and a long history of subsistence farming based on extensive linkages between farming, forestry, and livestock sectors clearly indicate that sustainable solutions to integrated mountain development must be very carefully selected.

3. ENVIRONMENTAL ISSUES

The main environmental issues in Nepal are related to excessive dependence on the one overstretched natural resource base, coupled with a high rate of population growth, a predominance of subsistence agriculture, increasing urbanization and some recent industrialisation. From a policy perspective, issues exist that are related to a lack of recognition of the proven ingenuity of the population in managing the fragile ecosystem, and of the capacity limitations of the public sector to directly manage common resources. Although the government diagnosed some of the underlying problems as early as the late 1950s and early 1960s, and undertook some isolated and generally fragmentary efforts to address those problems, a concerted realisation of the urgency of some of the environmental issues facing the country only emerged with the Fifth Five-Year Plan period (1975-1980).

Some groundwork was carried out, however, on soil conservation and watershed management, national parks and wild life protection during the Fourth Five-Year Plan period (1970-1975). A separate department was created for each of them, in addition to launching a few pilot programmes for soil conservation and watershed management as well as the establishment of seven national parks and wild life reserves. During the Fifth Five-Year Plan period priority was given to capitalisation of the infrastructure already

created for increased production and utilisation of the workforce, and to regional balance and economic integration of various regions. However, as part of the measures for environmental protection, efforts were also made to adopt a comprehensive population and employment policy, and to strengthen activities related to soil conservation, watershed management and the establishment of new national parks and protected areas.

The failure to achieve a reasonable and sustained rate of growth in the agricultural sector has led to the expansion of cultivation on economically less productive and environmentally fragile land which would otherwise remain under some kind of permanent vegetation cover. It also means that farms are being continuously subdivided and fragmented, with a resulting negative impact on household food security. In addition, the expansion of cultivation on ecologically sensitive uplands has led to accelerated erosion of productive soils, undermining the productivity of farmland and increasing sedimentation in downstream areas.

The other two areas of environmental concern are:

(a) growing urbanization; and

(b) industrialization.

Environmental degradation, particularly in the urban and peri-urban areas, has become a matter of serious public concern and the establishment of squatter-like manufacturing and housing units is considered to be the main source of the problem. According to the 1999 census, Nepal is one of the least urbanised developing countries, with the urban population accounting for less than 10 per cent of the total population. The urban population is projected to double in less than 15 years at its present growth rate, indicating that Nepal is already on the threshold of "urban transition".

Between 1981 and 1991, the urban population increased by 77 per cent compared with 20 and 23 per cent increases in the rural and total populations, respectively. It has been estimated that growth in the urban population resulting from natural increase was only 31.9 per cent during 1980-1985 and 32.5 per cent during 1990-1995, compared with 68.1 and 67.5 per cent as a result of non-urban to urban migration, international migration and urban boundary expansion during the same periods, respectively. However, the statistical information necessary for estimating the magnitude of the problem is extremely scarce.

Air and water pollution and the problem of urban waste disposal in the Kathmandu Valley are regularly reported in local, national and international newspapers, thus illustrating public concern in that area.

4. MAJOR PROBLEMS, CAUSES AND RESPONSES

Environmental problems in Nepal are the consequences of rapidly growing demand that exceeds the physical carrying capacity and the scale of the economy. These two interrelated facts generated two principal environmental problems in Nepal: land degradation and deforestation. These two processes are due to the nature of the terrain and over exploitation of the natural resource base. Recently, pollution problems have also emerged due to urbanisation and industrialisation.

The population of Nepal has increased from 8 million in 1952/54 to about 17.5 million in 1987 and 21.1 million in 1997. The population is expected to double again in about 25 years at the present growth rate of 2.66 percent per annum. The economic and environmental prospects are very dark for population growth of this scale, as current indicators of the quality of life and pressures on natural resources are already very worrying. Although physical carrying capacity is subject to change through technological improvements and investments in real capital, the gain achieved from technology and capital formation are far too limited in magnitude and extent to offset the pressure of rapidly growing population and its resulting pressure.

In principle, and given the resources required, economic and environmental targets and sustainability could be achieved through the use of policy instruments. Conversely, failure to meet attainable targets can be attributed to an inadequate use of policy. One of the most tragic aspects of Nepalese development history is that, while there has been reasonable perception of the basic problems, there has been a continuing failure of implementation. Sectoral Master Plans and similar studies have been prepared for agriculture, forestry, irrigation, urban development and tourism. Proposals for long-term plans are available for natural resource management and land-use planning. Despite all these plans and studies, most of which are reasonably accurate, the policy changes and institutional responses are very slow.

Another area, which is imparting serious negative impacts on the overall development of the country, is the shortage of skilled manpower. An adequate supply of well-trained and skilled manpower is a necessary condition for sustainable development. Because of the difficulties of acquiring private sector resources for developing manpower in countries such as Nepal, the role of the Government has been very critical. By providing adequate support to educational and training institutions, the Government can help to maintain a steady supply of trained manpower in the country. Despite substantial efforts in the past, the inadequacy of manpower is a major complaint of all the key development agencies such as those concerned with agriculture, forest, irrigation, transport, and power.

Increasing degradation of natural resources and slow economic growth are the two major symptoms of the un-sustainability of Nepal‘s environment and its economy. Economic development has resulted in increase consumption of its natural resources, thus resulting in decline in the stock of critical resources such as forest and soil. Deforestation and soil erosion are therefore the two most critical environmental problems, where available renewable natural resources are being lost at an alarming rate. Both these problems are natural as well as induced.

5. DEFORESTATION

The forest areas declined from 6.5 million hectare in 1964/65 to 5.5 million hectares in 1984/85 or 37. 4 percent of the total area of the country. Recent study has shown that it

has declined further to 29 percent. Deforestation is the major reason for the loss of the forest and it is caused by a number of important factors:

1. *Clearing Land for Agriculture:* Historically, with the rise in population, the area under cultivation expanded to the extent that even marginal lands were cleared for cultivation. Recent studies, however, suggest that due to low productivity, harsh working conditions, and mass migration, this trend is declining in the hills but still prevalent in the Terai region. The process of migration from the hills into Terai began in the 1950's and continues today, and as such increasing demands are being made for arable land. As the area becomes more accessible through improvements in the road infrastructure, land pressures could pose a threat to the fragile forest environment of Terai.

2. *Cutting timber:* Until recently, this was the second uncontrolled factor responsible for deforestation. Rapid growth in urban population exerted too much pressure on the forest for hard wood for housing and other infrastructure. This led to uncontrolled extensive cutting of trees. Beside this timber was, until recently, one of Nepal's major exports to India, but this is no longer the case.

3. *Degradation* (the removal of forest products in excess of the natural regenerative capacity): This is more widespread. The causes are related to increasing populations. In all parts of the country, and the proportional increase in demands for timber, fuelwood, litter, fodder and forest products. The main causes of forest degradation are over cutting of fuelwood; severe lopping of trees for fodder, setting fires; illicit felling of trees for timber smuggling; and poorly planned resettlement programme.

6. SOIL EROSION

The erosion processes in the hill and mountain areas are complex and include "natural" (geological) and "accelerated" (human-induced) erosion. Natural erosion is very high because of constant tectonic uplifting of the major mountain ranges and consequent down cutting of the river system. Natural erosion is characterised by different forms of mass wasting, particularly rock failure, landslides, slumps, riverbank cutting. The natural erosion rates in the rugged mountain are high.

In addition to this natural erosion human activities of deforestation, improper cultivation practices, overgrazing, cultivation shifting of land and developmental work induces accelerated soil erosion. The most serious problem is the loss of topsoil from cultivated and grazing land. As top soil erodes, soil fertility declines and the soil is less able to maintain its productive capacity.

In all cases, the determining factors for soil erosion are erosive rainfall (1.5 mm in 30 minutes), soil erodibility (especially red and sedimented soil), and slope (greater than 30 degrees) of the land.

Another important factor responsible for soil erosion is the rivers‘ high sediment loads that reduce the useful storage capacity of man-made reservoirs, and silt deposition in irrigation canals. During peak discharges, sedimentation results in abrupt river channel changes, causing huge losses to arable land in low-lying areas.

7. POLLUTION PROBLEMS

Water Pollution

The issue of water pollution is very critical in Nepal. Study shows that waterborne disease account for 15 percent of all illness and 8 percent of deaths. The proportion is higher among children and much higher for infants 0.4 years: 41 percent of all illness, and 32 percent of deaths. Recent studies show that in most of country the bacteriological quality of water is far from safe.

Many studies have been conducted to monitor the surface and ground water quality of Kathmandu Valley as well as other major cities of the Kingdom. In most cases rivers maintain good chemical and biological water quality until it enters urban areas, where ecological breakdown occurs. In all cases untreated city sewage and industrial effluent increases the pollutant concentration to levels that not only destroy the self-purification capacity of the river but also the aquatic life. The extent of water pollution in and around urban areas is fast becoming a matter of grave concern.

A review of previous studies indicates that domestic wastewater is the main factor affecting river and other water bodies such as ponds, lakes and under ground water bodies. Domestic wastewater is responsible for over 90 percent of river pollutants and the remaining 10 percent is contributed by industrial, agricultural, and service industries. Shallow ground water is extremely polluted because of the lack of sewerage facilities and over 30 percent of the deep-water aquifers are contaminated with colliform bacteria. The common practice of dumping solid waste in river and stream banks is wide spread and shows no sign of being curtailed.

Air Pollution

The extent of air pollution in urban areas is also increasing. Mass migrations of rural populations into the cities is resulting in an increase of commercial and industrial activities, exerting a severe strain on natural resources. The release of pollutants in the atmosphere is outstripping the carrying capacities of major urban cities. The monitoring work carried out in Kathmandu and other heavily populated industrial and commercial cities have shown that vehicular and industrial emission is the major source of pollution. In crowded cities like Kathmandu where topographical conditions are unfavourable to the dispersion of pollutants, the pollutant load in the air, especially in and around the core area, is very alarming. Major pollutants are suspended particulate matter, Sulphur Dioxide, Nitrogen Oxides, Carbon Monoxide and hydrocarbons. Lack of pollution control facilities, poor fuel quality, condition and age of vehicles, road conditions,

general awareness, weak enforcement mechanisms and lack of commitment on the side of government are the major reasons behind this.

8. LEGAL FRAMEWORK

The Constitution of the Kingdom of Nepal (1990); Environmental Protection Act, 1997(Environment Protection Regulations (1997) and its 1st Amendment (2055, 1998); ODS Consumption (Control) Rules, 2001 Animal Slaughter House and Meat Inspection Act, (1998) Hygiene; Consumer Protection Act, 2054 (1997) Food safety; Environment Protection Act, (1996); Environmental Planning Guidelines, (1998); Explosives Act, (1961); Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982)

CHAPTER V

OVERVIEW OF CONSTITUTIONAL, LEGISLATIVE AND INSTITUTIONAL FRAMEWORK

Key Issues: Multiplicity of Legislation; Overlapping Provisions; Non- Compliance; Enforcement; Faulty Structure/Scheme of Legislation; Drafting Legislation; Lack of Provisions for Implementation; Inbuilt Enforcement Mechanism

Key Legislation: The Constitution of the Kingdom of Nepal (1990); Environmental Protection Act, 1997(EPA; Environment Protection Regulations (EPR, 1997) and its 1st Amendment (1998); ODS Consumption (Control) Rules, 2001 Animal Slaughter House and Meat Inspection Act,(1998) Food safety; Environment Protection Act, (1996); Environmental Planning Guidelines,(1998); Explosives Act, (1961); Foreign Investment & Technology Transfer Act,(1993) and First Amendment (1996); Local Self Governance Act,(1998) and Rules, (2000); National Environmental Impact Assessment Guidelines; The Conservation Act, (1972); Nepal Drinking Water Corporation Act, (1988) ; Nepal Health Services Act (1996) and First amendment (1998); Water Resources Act, (1992); Solid Waste Management and Resource Mobilization Act, (1986); Ancient Monuments Protection Act,(1956) and latest Amendmen; Apartment Ownership Act, 2054; Buildings Act, Civil Aviations Act, (1958) ; Factory and Factory Workers Act, (1958); Industrial Enterprises Act, (1992) and First Amendmen; Kathmandu Valley Development Authority Act, (1988); Mines and Minerals Act, (1985); Mines and Minerals Regulations (1999); Nepal Petroleum Act, (1983); Public Roads Act, (1974); Public Roads improvement Cess Fund Act; Tourism Act, (1978); Vehicle and Transport Management Act, (1992) and Rules; Aquatic Animals Protection Act, (1961) and First Amendment; Management Regulations, (1996); Buffer Zone Regulations, (1996); Conservation Area Management Regulations, (1996); Forest Act, 2049 and First Amendment Act,(1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982).

1. CONSTITUTION

In Nepal at the national level, it was only in 1990, after the promulgation of the new Constitution of the Kingdom of Nepal, 2047 Bikram Sambat (1990) that some concerns were expressed over the protection of the environment in the Constitution. Clause 4 of Article 26 of the Constitution provides:

> The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by

> increasing the awareness of the general public about environmental cleanliness and the State shall also make arrangements for the special protection of the rare wildlife, the forests and the vegetation.'

Until recently, environmental legislation in Nepal had been piecemeal and there was no single basic law governing the issues of environment. Very recently, the Parliament of Nepal has passed the Environment Protection Act, 2053 (1997 A.D.), which may be regarded as the basic law on the topic of the environment. The preamble speaks of the objectives of the Act, which *inter alia,* recognizes that sustainable development can be achieved through the interrelationship between economic development and protection of the environment. Nepal has also enacted other sectoral laws in respect of sectoral environmental issues like wildlife, national parks, and ancient monument protection.

2. LEGISLATION

As noted above, the Constitution of the Kingdom of Nepal, 2047 Bikram Sambat (1990) (hereafter: the Constitution) makes specific provision for the protection of the environment. Similarly, the Constitution has made it mandatory for the government to seek ratification by a two-thirds majority of Parliament of any treaty or agreement that involves sharing of the natural resources of Nepal and has significant, serious or long-term implications for the country (Ministry of Law, Justice and Parliamentary Affairs, 1990). An umbrella act – the Environment Protection Act, 1997 – is in place and environmental regulations (Batabaran Sanrakshan Niyamawali 2054) have come into force. The Environment Protection Act makes impact assessment mandatory in development projects. Sectoral guidelines for environmental management have been prepared in respect of forests, roads, tourism, water and industry.

Consistent with the initiatives of that time and the then-existing policy of government intervention, including actual management of important economic activities, a number of legislative instruments were introduced with environmental implications. These included: the Private Forest Nationalization Act, 1956; the Lands Act, 1965; the Forest Protection Act, 1956; the Ancient Monuments Protection Act, 1956; the Wild Life Protection Act, 1957; the Aquatic Species Protection Act, 1961; the Malaria Eradication Act, 1965; the Contagious Diseases Act, 1965; the Forest Protection (Special Arrangements) Act, 1967; the Plant Protection Act, 1972; the National Parks and Wildlife Conservation Act, 1973; the King Mahendra Trust for Nature Conservation Act, 1982; the Soil Conservation and Watershed Management Act, 1982; and the Solid Waste Management and Resource Mobilization Act, 1986. The Acts are indicative of the initiatives taken to empower the central government to manage natural resources and regulate them so that they become consistent with State policies.

Notwithstanding the lack, until recently, of specially designed and unified legal instruments to comprehensively address environmental and consumer protection issues, there are some 69 different Acts which directly or indirectly provide the basis for regulating and enforcing various environmental protection measures, and for safeguarding the interest of general consumers. Each Act is supplemented by

corresponding regulations. While it would be too exhaustive to highlight the provisions of each Act or regulation, some of the major provisions of the umbrella legislation – the Environment Protection Act (EPA), 1997 – are presented below.

The objective of the EPA is to recognize the interdependence between development activities and the environment, and to maintain a clean and healthy environment by minimizing, as much as possible, the impact of environmental degradation on humans, animal and plant species, and their physical surroundings. The EPA provides the legal basis for the relevant authorities to require an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) for all projects with potentially negative impacts on the environment. The enforcement of the Act means that it is not possible to implement such projects without the approval of the authorities concerned. While the responsibility to conduct an IEE is left to individual implementing agencies, all cases requiring an EIA must be referred to the Ministry of Population and Environment. The Ministry can make use of outside expertise for reviewing EIA reports when deciding whether or not to approve a proposal. The implementing agencies can then approve a project with the proviso that the proponent adopt the necessary preventive or mitigatory measures as indicated by the EIA.

A highly significant consequence of the Act is the creation of a legal basis for the authorities to fix and enforce pollution standards. Thus far, in the absence of a legal framework, no significant progress has been made either in setting such standards or in enforcing them.

The EPA empowers the authorities concerned to impose restrictions on all activities and equipment which are found to have any significant adverse effect on the environment. It makes provision for appointing environment inspectors who have authority to inspect, examine and recommend measures for adoption by clients. It gives the government the authority to declare specific areas of amenity value, rare species habitat, biotic diversity, and places of historic and cultural significance as environmentally protected areas. The EPA also has entrusted the agencies concerned with the preservation of national heritage sites, including those listed as world heritage sites. Another distinguishing feature of the EPA is the establishment of an environment protection fund to be mobilized for The objects of the Act.

The Environment Protection Council is constituted under the EPA, and thus provides a legal validity to the Council. It also provides the legal framework for the adoption of the national and two sectoral EIA guidelines that have already been approved. Similar guidelines are under preparation for a number of other key sectors.

The Act makes provision for rebates and facilities to any industry, commercial activity and technological innovation resulting in a positive impact on the environment. Provision has also been made for compensating affected parties in cases of damage caused by pollution, noise, heat or waste in contravention of the Act, with the addition of supporting regulations. Fines and penalties have been specified for violators of the Act.

The EPA obliges the Ministry of Population and Environment (MOPE) to make the arrangements necessary in order to make EIA reports public, so that the general public may render opinions and suggestions. The Environment Protection Rules (EPR), 1997 further elaborates on the public consultation process in order to ensure the participation of different stakeholders from initial scoping to final approval. The EPR also obliges the proponent to issue a public notice on the contents prior to the preparation of a scoping report. Once the draft EIA report is prepared, based on the approved Terms of Reference (TOR), the proponent should conduct a Public Hearing at the project site. Following submission of the EIA report to the Ministry of Population and Environment, it should be made public. The MOPE has to legally approve the EIA report within 60 days upon receipt.

In brief, it is clear that the EPA is a short and well documented piece of umbrella legislation, appropriate to the current situation in Nepal. It covers the essential aspects related to environmental protection:

(a) the requirement for IEEs and EIAs;
(b) inspections;
(c) the provision of authority to establish protected areas;
(d) testing facilities;
(e) the establishment of a fund;
(f) the establishment of the necessary administrative mechanisms;
(g) the establishment of the EPC;
(h) penalties for violations of the Act; and
(i) the authority to enforce guidelines and standards.

The Act is flexible, leaving some substantive aspects open, with the most significant being inspections. According to the Act, the Ministry of Population and Environment can delegate the function of inspections to experts outside the ministry. It is not yet clear which types of arrangements will be instituted under the regulations. There are two viewpoints in that regard:

(a) the centralization of the function within the Ministry of Population and Environment; and
(b) decentralization to the respective agencies, with the Ministry of Population and Environment retaining an overall supervisory role.

Environment-related Provisions in Some Contemporary Acts

Acts	Relevant Provisions
Local Self-Governance Act, 1998	Specific environmental scope of work for DDC, VDC and TDC comprising local level environmental planning; forest and biodiversity conservation, land-use management, pollution control, public sanitation, etc.
Environment Protection Act, 1996	Maintain clean and healthy environment and contribute to sustainable development
Forest Act, 1992	Conserve and manage forest and biodiversity

Water Resources Act, 1992	Promote environment assessment, water quality standard, and avoid significant impacts on local environment in the course of water use
Electricity Act, 1992	Avoid environmental effects during electricity generation and transmission
Vehicle and Transport Management Act, 1992	Regulate vehicular exhaust emission according to the standard
Industrial Enterprises Act, 1992	Promote the adoption of industrial pollution control measures, including incentive and disincentive provisions
Pesticide Act, 1991	Regulate the use, production and distribution of pesticide
Labour Act, 1991	Adopt preventative and curative measures for occupational health and safety
Solid Waste (Management and Resource Mobilisation) Act, 1986	Ensure solid waste management through the collection, transportation, recycling, disposal, and the classification of hazardous wastes
Soil and Water Conservation Act, 1982	Ensure soil conservation through land use regulation
King Mahendra Trust for Nature Conservation Act, 1982	Generate fund and manage the nature with people's participation
Tourism Act, 1978	Minimise environmental pollution during mountaineering activities
National Parks and Wildlife Conservation Act, 1973	Declare and manage national parks, wildlife reserves and conservation areas

Most of the legal provisions on environment management are very new and while some require the setting of environmental standards, others require extended rules and regulations for enforcement. These regulations have, however, opened avenues for developing and/or amending other measures for environment management.

INSTITUTIONAL FRAMEWORK

Key Issues: Environment Capacity Building; Environment data Base; Environment Information; Environment Education; Technical man power;

Key Institutions: Ministry of Population and Environment; Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and

Communication Ministry of Defence Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

1. INTRODUCTION

The Ministry of Population and Environment (MOPE) was created in September 1995 to act as the national focal point for the interrelated areas of population and environment. Its main responsibilities include:

(a) the formulation and implementation of policies, plans and programmes;
(b) the preparation of acts, regulations and guidelines;
(c) undertaking surveys and research studies;
(d) the dissemination of information;
(e) the monitoring and evaluation of programmes; and
(f) human resources development.

The Ministry‘s scope of work includes two broad categories of activities: primary and supportive. Primary functions include activities executed on the initiative of the ministry in cooperation with other agencies. Cooperation and assistance extended to other ministries and agencies in executing their own programmes and activities are considered to be supportive functions.

The primary functions of the Ministry of Population and Environment related to the environment revolve around four aspects:

(a) environmental conservation;
(b) pollution control;
(c) enforcement and monitoring of environmental standards and;
(d) Environmental Impact Assessment.

The primary and supportive functions detailed below are listed in the approved scope of work of the ministry (Ministry of Population and Environment, 1996).

Primary functions

The primary functions include:

- Formulating and implementing perspective and periodic plans and programmes related to population and the environment;
- Organizing meetings, seminars and workshops;
- Preparing, publishing and disseminating audio-visual and information materials aimed at raising public awareness;
- Upgrading and updating the documentation process;
- Acting as a national focal point on population and the environment for all international and bilateral donors;
- Representing the country and/or recommending other agencies or experts/persons for representation at national and international seminars, conferences and conventions on population and the environment;
- Organizing appropriate training for the implementation of programmes on population and environment;
- Functioning as the secretariat of national commissions, councils etc. on both current and future population and environment issues;
- Amending, as and where necessary, existing policies and action plans, and formulating national policy and action plans on the main aspects of environmental conservation;

- Formulating, refining and implementing EIA guidelines.
  This function involves three specific activities:
  (g) preparing, revising and refining sectoral EIA guidelines;
  (h) encouraging those agencies concerned to conduct EIAs as per approved guidelines before implementing any development project; and
  (i) examining and approving EIA reports of intersectoral and national importance;

- Studying existing laws on different aspects of environmental conservation, and amending or establishing the necessary legislative framework.
  This function includes:
  (a) the preparation of an umbrella law on environmental matters;
  (b) the formulation of rules, regulations and bylaws; and
  (c) the maintenance of a chronicle of judicial precedents on environmental matters;

- Implementing the provisions of, and obligations arising from, international agreements, treaties and Conventions on the environment, by:
  (a) acting as the national agency for international treaties on environment;
  (b) preparing a strategy to implement the provisions of international treaties; (c) taking a lead role in cooperating with other ministries in fulfilling obligations arising from international conventions, treaties, agreements and declarations; and

(c) participating in programmes conducted in pursuance of international conventions;

- Conducting studies and research on environmental matters, and carrying out or participating in related training, involving:
  (a) studies and research on the environment and the conservation of resources;
  (b) the assessment of environmental losses resulting from disasters; and
  (b) the specification of minimum natural resource requirements for any specified area;

- Identifying pollution indicators and indices for the setting of standards, including:
  (a) research or surveys; and
  (b) the identification of different polluters to enable the control of pollution and fixing of ambient standards;

- Preparing an annual State of the Environment Report for disseminating information on the status of the environment in Nepal.

Supportive functions

The supportive functions include:

- Helping other agencies, from the standpoint of population and Environmental management, to develop small towns in appropriate places, with economic and social infrastructures, including:
  (a) assistance in maintaining the environmental balance, structure and management of the population at the time of planned expansion of small towns;
  (b) the provision of services to the population through service centres; and
  (c) the relocation of industries from urban areas;

- Assisting agencies involved in forestry, agriculture, labour, industry, education, women‘s development etc. in designing and implementing training programmes which include population and environmental issues, in order to integrate the population, the environment and development issues;

- Creating awareness of population and environmental issues among community leaders and workers at district and local level government offices etc.;

- Assisting in maintaining a balance between population and the environment through policies and programmes, such as:
  (a) discouraging the use of fragile land for cultivation and settlement;
  (b) discouraging cultivation on marginal land;
  (c) encouraging the use of alternative energy sources in order to save forests;
  (d) arranging grazing land on appropriate sites;

(e) encouraging the design and implementation of settlement plans, taking into consideration the different aspects of population management;
(f) discouraging unplanned urbanization; and
(g) controlling pollution hazardous to public health;

- Helping to develop and implement a code of conduct which will check adverse environmental impacts resulting from activities conducted by different institutions. This function includes:
  (a) the preparation of an Environmental Code of Conduct for tourists, and the implementation and monitoring of that code through the Ministry of Tourism;
  (b) assisting the Ministry of Industry to develop environmental standards for industries and helping in their implementation;
  (c) assisting municipalities to preserve the urban environment; and
  (d) developing a Code of Conduct for political parties and election candidates regarding publicity and the distribution of pamphlets during elections, and the implementation of that code through the Election Commission;

- Controlling pollution through research, and encouraging recycling and appropriate disposal of waste products;

- Monitoring in order to ascertain whether various agencies, industries, communities and organizations are adhering to the defined environmental standards, and imposing penalties on those violating the standards, including:
  (a) applying the "polluters pay principle" in the case of point-of-source pollution of water, air and soil; and
  (b) in the case of non-point source pollution, making communities responsible for finding and implementing solutions;

- Become involved in EIA of cross-sectoral projects, and organize high-level training within and outside the country to prepare expert human resources in the area of environmental management.

The above primary and supportive functions of the Ministry of Population and Environment indicate its far-reaching role and establish the Ministry as the national focal point for all population and environment-related matters. However, since it has only been established for a relatively short period, it has yet to develop its capability from the viewpoint of organizational strength, trained manpower and financial resources.

Given the enormous task assigned to it, its current capability is far from adequate.

2. SECTORAL MINISTRIES AND INSTITUTIONS

Sectoral ministries and agencies under those ministries are directly responsible for taking adequate measures to prevent or minimize adverse environmental consequences in their

respective areas of development. For example, the Ministry of Industry is responsible for the preparation and enforcement of adequate environmental standards for the industrial sector, while the Ministry of Water Resources serves as the key agency in the water resources sector.

Ministry of Agriculture

The main focus of the Ministry of Agriculture is on planning, policy formulation and the monitoring of agricultural development programmes and projects. The Ministry is directly involved in the formulation of appropriate policies, standards and legal instruments related to a number of environmentally sensitive products, such as food products, animal feed and agrochemicals. The Ministry of Agriculture is also responsible for the control of agriculture-related pollution.

A number of agencies under the Ministry of Agriculture provide technology and extension services not only to producers but also to traders and processors of agricultural products. Its various departments and other entities operating at the central and local levels constitute a wide network throughout Nepal. Those entities are:

- The Nepal Agricultural Research Council (NARC) which develops suitable technologies and disseminates them to producers, traders and processing entrepreneurs;
- The Department of Agriculture, which deals with extension and training in all agriculture-related areas excluding livestock management and veterinary services;
- The Department of Livestock Services, which deals with extension and training for the livestock sub sector, including pasture management;
- The Nepal Tea and Coffee Development Board, which promotes the tea and coffee industries; the National Dairy Development Board which promotes the dairy industry and;
- The National Seed Development Board which promotes the seed industry.

Of direct concern in the present context is the role of the Central Food Research Laboratory in implementing the Food Act, 1966, the Animal Feed Act, 1976, and their corresponding regulations.

Ministry of Forest and Soil Conservation

The Ministry of Forest and Soil Conservation is involved in planning, **policy formulation and monitoring of forest-related programmes**, including the utilization of forest products, wildlife conservation and biodiversity. The Ministry of Forest and Soil Conservation is also responsible for the **legal instruments and administrative provisions** regarding the utilization of forest products.
Under the Ministry, the Department of Forests administers the forests and rangelands throughout the country, which account for about 47 per cent of the total area of the country. The Department of Plant Resources is responsible for botanical research on forest species. The Forest Products Development Board promotes the economic and sustainable utilization of wood, medicinal and aromatic plants, and other minor forest

products by developing suitable technologies and processes for industries utilizing such products. The Forest Survey and Research Centre acts as an autonomous body in conducting forestry-related research and surveys. The Department of National Parks and Wildlife Conservation is responsible for the management of the national parks and protected areas as well as biodiversity conservation. The Department of Soil Conservation (DSC) is charged with the responsibility of carrying out soil conservation activities and watershed management.

Ministry of Industry

The Ministry of Industry bears two main responsibilities associated with the industrial sector: industrial promotion; and environmental conservation. Regarding the second responsibility, the Ministry controls industrial pollution, in both new and existing industries.

New industries, which are prone to cause damage to the environment, are required to incorporate protective and mitigatory measures, including the application of IEEs and EIAs (see above). Existing industries must comply with abatement measures determined by the Ministry through control orders, and those industries are required to achieve a completely "clean" status within a stipulated period by meeting the acceptable levels of emission and effluent standards. This Ministry is also responsible for preparing and enforcing legislation and regulations on industrial pollution.

The Ministry of Industry has been implementing a project on industrial pollution control management with support from the United Nations Industrial Development Organization (UNIDO) with four main objectives:

(a) the formulation of an appropriate policy on pollution control and management;
(b) the development of industrial pollution standards;
(c) the strengthening of laboratory facilities; and
(d) human resources development for industrial pollution control and management.

One of the outcomes of the project has been the preparation of *Industrial Pollution Control Regulations for Air and Water Discharges*, which are awaiting Cabinet approval. Two other initiatives are in process: *Industry-Specific Discharge Standards for Air- and Water-Borne Environmental Contamination*; and *Industrial Waste Management Policy in Nepal*. A separate cell on Environment and Technology Transfer also exists within the ministry.

The Department of Industry, the Department of Cottage and Small-Scale Industries and the Cottage and Small Industry Promotion Board together are responsible for promoting industries as well as for enforcing norms, guidelines and standards related to adverse environmental impacts arising from industries. Both the Department of Industry/Irrigation and the Department of Cottage and Small-Scale Industries have an environment unit which performs the following functions:

(a) enforcement of the discharge standards;
(b) applying IEE and EIA to industries;
(c) issuing permits for industrial establishment; and
(d) monitoring emissions and effluent discharges.

The Nepal Bureau of Standards and Meteorology (NBSM) is responsible for setting standards for air, water and other environment-related components, and for enforcing those standards. NBSM is also mandated to fix effluent and emission standards for industries and motor vehicles.

Nepal Electricity Authority

The Nepal Electricity Authority (NEA) is a public sector organization, responsible for the generation and distribution of electricity to urban and rural areas. Remote areas are served by decentralized small hydropower and diesel plants. The Small Hydropower Development Board of the NEA was recently restructured into the Small Hydropower Department under the Rural Electrification Directorate. NEA does not implement micro-hydropower projects below 100 kW.

Parliamentary Committee on Natural Resources and Environmental Protection

The Parliamentary Committee on Natural Resources and Environmental Protection (PCNREP) oversees government action in initiating natural resources conservation and environmental protection measures. The Committee also gives advice to the executive branch of the government regarding appropriate measures for improving national overall environmental health. Being a legislative subunit, PCNREP can give directives to, and seek information and clarification from, the executive branch of the government.

PCNREP is headed by an independent chairperson elected from among the members of the House of Representatives by the Committee. PCNREP has up to 11 ex-officio members, comprising the Prime Minister and other Ministers, together with 22 members of the House of Representatives nominated by the parliamentary committees of the various parties.

The National Development Council

The National Development Council (NDC) is the highest policy-level body. Formerly chaired by the King of Nepal, the Council is now chaired by the Prime Minister. Its mandate includes providing guidance on major policy issues and periodic plans. The membership of NDC comprises all Cabinet ministers, all the members of the National Planning Commission (NPC), the chairpersons of the various parliamentary committees, the chairpersons of two District Development Committees from each of the five development regions of the country, the leader of the main opposition party in the House of Representatives, the chairpersons of all national level political parties, the president of the Federation of Nepal Chambers of Commerce and Industry, and a few persons

nominated from among intellectuals and representatives of other walks of life. The NPC serves as the NDC secretariat.

The Environment Protection Council

The Environment Protection Council (EPC) is a high-level body that was created in 1992 to provide guidance on the formulation of policies, the preparation of working procedures and the implementation of policies in pursuit of the following objectives:

- Effective management of natural and physical resources;
- The achievement of sustainability in the capacity of all Nepalese by maintaining a balance as well as coordination between development efforts and environmental protection;
- The support of efforts for sustainable development through the use, management, development and protection of physical resources and heritage, taking into consideration the social, economic and cultural needs and opportunities of the present and future generations;
- The timely identification of likely adverse environmental impacts from population growth, haphazard settlement and development projects, and the prevention and mitigation of such impacts;
- The development of a national system for environmental planning, environmental impact assessment and evaluation, pollution control and the protection of the national heritage;
- The utilization, development, management and protection of the capacity to regenerate and recycle physical resources without inflicting an adverse impact on the environment;
- The implementation of special measures for the protection and promotion of rare and endangered national wildlife, plant species, biological diversity, the genetic pool, natural and cultural beauty and sites, and environmentally threatened areas, in accordance with their importance;
- The preparation and improvement of the environment-related legal framework;
- The development and coordination of activities undertaken by governmental agencies and non-governmental organizations (NGOs) for the effective implementation of environment-related laws and policies;
- The establishment and operation of an environmental protection fund;

- The dissemination of information, and the improvement of education and public awareness related to the environment;

- The development of human resources in the area of the environment.

Membership in the EPC comprises the Ministers of several ministries, senior civil servants, representatives of NGOs and the private sector, and individual professionals.

The Ministry of Population and Environment serves as the EPC secretariat. The Ministry is also required to carry out EPC directives. The Minister, State/Assistant Minister and Secretary of the Ministry of Population and Environment are appointed as the vice-chairman, member and member-secretary of EPC respectively, thus providing the necessary links between the two agencies.

National Planning Commission

NPC is an autonomous government body responsible for formulating policies on overall national and sectoral development. Headed by the Prime Minister, the NPC includes a vice-chairman and five members nominated on an individual basis, as well as a few ex-officio members. It is primarily an advisory body with limited executive authority.

NPC tasks include: preparing the national Five-Year Development Plan which comprehensively outlines the national development goals, objectives and strategies; presenting detailed sectoral, sub-sectoral and cross-sectoral development strategies and programmes; and providing estimates of financial resources allocations to the programmes included in the Five-Year Plan. NPC scrutinizes and approves the annual programmes of all ministries and parastatals, and it regularly monitors progress. Implementation of all development programmes and projects undertaken in the public sector are subject to prior endorsement by the NPC.

As part of the regular NPC mandate, all environmental policies, programmes and projects in the public sector are subject to review and approval by NPC before they are put into effect. There is an Environment Protection Division within NPC, which is responsible for overseeing and coordinating inter-sectoral activities related to planning, programme budgeting and the monitoring of environment-related actions. Prior to the creation of the Ministry of Population and Environment, the division was the only national level bureaucratic entity responsible for carrying out EPC directives.

Product Testing Institutes

A number of public sector agencies are engaged in providing analytical services relevant to the environment. They include:

(a) The Central Food Research Laboratory, under the Ministry of Agriculture. This is the principal agency providing technical inputs and analytical services in the enforcement of food and feed quality standards in accordance with the Food Act, 1966, and the Animal Feed Act, 1976; and

(b) The Nepal Bureau of Standards and Meteorology (NBSM), which is the technical arm of the Ministry of Industry and is responsible for setting standards, and undertaking laboratory testing and environmental auditing. NBSM also has a separate cell responsible for industrial pollution monitoring and evaluation. It has already established one central laboratory in Kathmandu and two regional laboratories in Birgunj and Butwal. A third regional laboratory has been proposed for Biratnagar.

A small number of laboratories which specialize in chemical and other tests related to air and water pollution are available in the private sector. While those laboratories have not been accredited by the government institutions concerned, the policy is to gradually accredit private laboratories which meet minimum service qualities and technical capability. One such laboratory was recently accredited by the Ministry of Industry.

The above review demonstrates that the existing national level institutions are adequate for responding to the needs of Nepal as far as the integration of environmental considerations into the policy decision process is concerned. However, considerable gaps exist in coordination, both in terms of achieving coherence among macro level and sectoral policies, and in their implementation at different levels. Those gaps emanate from:

(a) an inadequacy of trained manpower in the agencies concerned; and
(b) a lack of motivation among the agencies in presenting a united front in facing the issues.

The Ministry of Housing and Physical Planning (MHPP) and the Department of Metrology (DOM) are the responsible agencies, but due to lack of personnel, neither could tackle the problem. The DOM has been unable to monitor air quality because of lack of necessary equipment. In pursuance of the direction to improve the air quality of the country, particularly of Kathmandu Valley, the Ministry of Population and Environment (MOPE) has taken measures to remove diesel-fuelled three-wheeler from the streets. It is trying to promote a pollution free public transport system in the Valley. The *Kathmandu Valley Development Authority Act, 1998 (KVDAA)* contains provisions for environmental pollution control, but this statues remains to be implemented.

CHAPTER VI

NATIONAL ENVIRONMENT GOVERNANCE

Key Issues: Forest Depletion, Land Degradation, Water Pollution, Air Pollution; Inadequate Capacity for Management of Environment; Loss of Biodiversity; Rapid Urbanization; Landslides; Lack of Agricultural Land; Vehicular pollution; Indoor Pollution; Environment Education; Environment Capacity Building;

Policy Framework: Nepal Environment Policy and National action Plan, 1993 updated in 1998; national Conservation Strategy

Key Institutions:

Ministry of Agriculture and Cooperative; Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Information and Communication; Ministry of Defence Surveillance of national parks and wildlife reserves; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Land Reform and Reform of Land Tenure, Land Management Policy; Ministry of Local Development Resource Conservation and Integrated Rural Development, and Decentralization, Solid Waste Management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of Science and Technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, Regulation and Management of the of Water Resources, Irrigation Works, Electricity, Flood Control;

1. INTRODUCTION

The Ministry of Population and Environment (MOPE) has prepared a five-year Strategic Plan with a view to mainstreaming environmental aspects in socio-economic development plans and programmes. This plan outlines MOPE‘s mission, goals, strategies, priority activities and outputs. The recommended mission of the Ministry is ‗to promote environmentally sound and sustainable development and thereby safeguard human health‘. The Strategic Plan aims to integrate environmental instruments in economic development planning and decision-making; develop and strengthen human resources (knowledge based and technical/scientific) and institutions; institutionalise stakeholders‘ participation on environmental management; and minimise pollution load through the enforcement of environmental legislation and standards.

The Ministry of Forests and Soil Conservation is currently finalising the National Biodiversity Action Plan (NBAP) under the Biodiversity Conservation Project funded by the Global Environment Facility (GEF). The NBAP has the objective of providing a systematic and strategic approach to biodiversity protection in accordance with the

Convention on Biological Diversity, to which Nepal has been a Party since February 1994. This Action Plan identifies key biodiversity issues, and documents a number of priority programmes in the areas of agriculture, community forests, livestock genetics, rangeland, protected areas, wetland, and non-timber forest products. The NBAP proposes special programmes to address cross-sectoral issues on biodiversity. A time frame and estimated cost is also proposed therein.

2. ENVIRONMENT POLICY IN NEPAL

Systematic national planning in Nepal commenced after 1956. All Five Year Plans prior to 1975 paid attention on natural resource utilization, agriculture production increase, sanitation and sewerage facilities and infrastructure development. At the end of the fourth plan, the need for the integration of environmental aspects in the development plan was established. Thus, in the fifth plan (1975-80), policies and programs on land use, soil conservation and watershed management, development and management of national parks and wildlife reserve were incorporated. Environment and Land Use policy was incorporated for the first time as a national policy in the sixth plan (1980-85). In this periodic plan, environmental aspects were included in the land use policy. A natural resource protection commission was also established. It is in this plan period that the export of forest products was banned.

The Seventh Five Year Plan (1985-1990) was the first discrete plan to consider the environment as a distinct component in the planning process and to stipulate the preparation of an environmental impact assessment (EIA) for all major development projects. In 1988, His Majesty's Government of Nepal (HMG) prepared the *National Conservation Strategy, 1988* (NCS) and endorsed it. The objectives of the NCS were:

(a) to satisfy the basic material, spiritual and cultural needs of the Nepalese people;
(b) to ensure sustainable use of land and renewable resources;
(c) to preserve biological diversity of the nation, and
(d) to maintain essential ecological and life support systems.

In 1990, the Council for the Conservation of Natural and Cultural Resources was set up. Unfortunately, implementation of environmental programs such as the EIA policy stated in the seventh plan could not be realised to their intended extent. This was largely due to lack of coordination amongst sectoral programmes, lack of qualified and experienced manpower, lack of appropriate legislation, funds and appropriate institutional arrangements.

It was only during the Eighth Five Year Plan (1992-1997) that the EIA process was made mandatory for major development projects. The eighth plan clearly maintained the environmental policies for five years in the plan document.

The role of environmental considerations in national governmental policy has assumed greater prominence with the promulgation of the new Constitution, which contains

certain provisions regarding the responsibility of the state to the protection of the environment. Under the previous (1962) Constitution, the role of the natural environment in the country's social and economic life was not mentioned. However, under the new *Constitution of the Kingdom of Nepal, 1990*, which arose following the period of political realignment in Nepal, the State is obliged to incorporate environmental matters into its policy process. The pertinent section, Article 26(4), proclaims:

> The State shall give priority to the protection of the environment and also to the prevention of its further damage due to physical development activities by increasing the awareness of the general public about environmental cleanliness, and the State shall also make arrangement for the special protection of the rare wildlife, the forests and the vegetation.'

In order to speed up the matter of Environmental Protection in the country, HMG established the Environmental Protection Council in 1992 (see above). The objective was to formulate and implement national environmental policies, plans, and programs related to environmental conservation, and to coordinate the environment-related sectoral ministries and institutions. The first achievement to this end was the formulation of the Nepal Environmental Policy and Action Plan (NEPAP). The NEPAP identified the existing environmental problems connected with land utilization, forest and pasture management, water resource management, fulfilment of basic needs, sanitation, poverty alleviation, conservation and promotion of natural heritage, minimisation of adverse environmental impacts, urban industrial development and development of physical infrastructure. It also suggested a work plan to resolve associated sectoral problems.

To promote and insure the EIA process in major development projects, HMG endorsed the National Environmental Impact Assessment guidelines in 1993, and Environmental Impacts Assessment Guideline for Forestry and Industrial Sectors in 1995.

In the Ninth Five Year Plan (1997-2002), the government demarcated new environmental policy and a 5 year working plan. The present environment related government policies are broadly based on the State Policies of the Constitution of Nepal. It is the new Constitution that has given the direction to the environmental policies and plans formulation in the country.

3. NEPAL ENVIRONMENTAL POLICIES AND ACTION PLAN (NEPAP) 1993

This is an important document giving direction to the government and line ministries on environmental plans and policies of the country. In outline, the broad environmental policies represented in the NEPAP are:

- Efficient management of natural and physical resources;
- Balancing and coordinating developmental efforts and environmental conservation in order to meet the basic needs of the people in sustainable manner;

- Manage, develop and conserve natural, cultural, physical and heritage resources keeping in view of the social, economic and cultural needs and potentialities of the present and future generations;
- Identify and mitigate to the extent possible the adverse environmental impact caused, or likely to be caused by the human activities and development projects;
- Utilise, manage, develop, conserve and recycle natural and physical resources in a manner that is not detrimental to their ability to yield long term benefits.
- Formulate and implement special protection and conservation policies and plants to safeguard important national heritage resources such as rare wild life species, plants, biodiversity, genetic pools, environmentally sensitive areas, and man-made heritage sites of aesthetic and cultural importance.
- Formulate necessary rules and regulation of various environmental issues to the needed areas and to carry out timely reform of existing legislation.
- Widen formal environmental education in primary to university level institutions
- Develop institutions for the effective implementation of environmental laws and policies.

4. SECTORAL ENVIRONMENTAL POLICIES AND PROGRAMMES

Apart from the policies and programmes directly related to environmental management, the Eighth Plan policies emphasised integration of environmental objectives in all sectoral policies. Emphasis was given to appropriate use of resources, higher productivity and efficiency and comparative advantage of different locations while implementing any sectoral programmes such as land use, forest, agriculture, public health, water resources, and energy.

Land Utilisation

The Eighth Plan reiterated the programmes addressed to soil erosion, land slide, and declining productivity and suggested a land use policy to effectively tackle the problems. The policy focused on the economically profitable use of land, encouraging agricultural use of irrigated land, extension of urban settlement, industries, and commercial farming on the basis of scientific land use planning. It envisaged developing a national land use master plan and updated land use statistics through the use of the Geographical Information System (GIS). In order to ecologically protect the Chure and Bhawar regions, the policy made provision for protection of forest in those regions. The policy also envisaged promoting community and lease-hold forestry in marginal land of all ecological zones.

Agriculture and Forestry

The Eighth Plan had tried to conceptually integrate agriculture and forestry activities. It recognised that farming and forest resource utilisation are interdependent activities. The plan viewed agriculture and forestry development as mutually supportive in order to achieve sustainability in production, improvements in farming, conservation of agro-ecological zones, development of transport and market facilities, linkages between socio-economic development and environmental programmes.

Agriculture

The Agricultural Perspective Plan (APP) was formulated to launch the agriculture sector of Nepal into a sustainable high growth path. The APP states the conditions for accelerated growth in agriculture and employment which are the keys to reducing poverty in Nepal. It also states explicitly the ancillary policies through which the APP growth strategy can enhance the environment and circumvent potential environment hazards in the plan.

Policies on agriculture envisaged a shift from food grain production to commercial production of high value crops such as fruits, vegetables, livestock, fisheries, and industrial crops. In order to improve the nutritional situation, production and consumption of local foodstuffs would be encouraged. The plan foresaw a unified management system at the local level bringing together all government agencies and NGOs under one umbrella agency. The Private sector and co-operatives would be

encouraged to invest in agriculture. The government planned to gradually withdraw agricultural subsidy while ensuring necessary services through competition. In order to achieve the policy objectives, the plan suggested various programmes including production of cereal, cash, and spice crops as well as vegetables. Other programmes that have direct bearing on environment are horticulture extension, nursery establishment, and livestock and agricultural extension services.

Forestry

The policies on forestry seek wide participation from people, promotion of agro-forestry, control of land degradation, and afforestation.
The forestry sector was categorised into different management types: community, leasehold, national and private forest management. It also emphasized watershed management, national parks and wildlife reserves, alternative energy, forest land rehabilitation, and botanical research.

The Community Forestry Programme was designed to hand over the national forest to the user groups through district forest offices. Through the leasehold programme, the national forests were leased out to individuals or group of individuals for specific purposes such as establishment of resorts, herb farming, and rearing insects. The Agro-forestry programme provided incentives (loans, technical supports) to communities to develop industrial forestry adjacent to the industries. A fund was created with the revenue generated from the use of parks and reserves part of which is spent on employment generation for the local people.

Irrigation

The Eighth Plan policies tried to promote multiple use (drinking and electricity generation) of small irrigation systems. Conjunctive use of ground water and use of lift and sprinkler irrigation systems was the main thrust of the policy. It envisaged private sector participation in irrigation facility development and joint management by user groups, Government and private sector. For these policies to materialise, irrigation lines of credit were introduced.

Energy

The energy policy tried to integrate the hydropower sector with the irrigation programme, promote renewable energy use, replace imported petroleum products with electricity and discourage energy inefficient vehicles and machines. It made provision for tax exemptions for 10 years for projects of more than 1000 kW and 15 years for projects of up to 1000 kW to private entrepreneurs. It encouraged people to opt for alternative sources of energy. Programmes such as bio-gas, wind energy, bio-mass energy, and solar energy were developed to materialise the policy.

5. NATIONAL ENVIRONMENT ACTION PLAN

Nepal started the preparation and implementation of the Environment-related Action Plans (EAP) after participating in the United Nations Conference on Environment and Development (UNCED) held at Rio de Janeiro in 1992. In response to the growing awareness about the importance of mainstreaming environmental programmes in the development planning and implementation, Nepal prepared the NEPAP which was endorsed by the Environment Protection Council in 1993. Since 1993, several institutions have continued the incorporation of selected activities in programme planning and implementation. However, much of the policy still remains to be implemented.

6. MONITORING MECHANISMS AND ENFORCEMENT SYSTEMS

Monitoring mechanisms

The absence of a permanent system for generating and maintaining, on a regular basis, basic data on various aspects related to the environment is a serious problem in Nepal. A unified system does not exist under which relevant data can be generated on principal natural resources such as land, water, forests and biodiversity, and changes occurring in their use over time. Similarly, data systems do not exist either on the extent of untreated toxic effluent discharges into the natural system or the effects of such discharges on ecosystems and human health.

Emissions from industrial establishments and vehicles are becoming more and more of a serious problem, particularly in the fast-growing urban centres. Except for a ―project approach" to measuring some of the environmentally damaging consequences (e.g., vehicular emissions in the Kathmandu Valley), there are various contributing factors to such pollution.

As stated above, umbrella legislation on environment protection has been passed and regulations have to come into force making the Act fully operational. The monitoring mechanism envisaged in the Act is the appointment of environment inspectors or the assignment of other officials to act as inspectors. The functions of such an inspector are, *inter alia*:

(a) To monitor the actions taken to reduce, eliminate and control pollution according to the Act and its regulations; and

(b) To monitor whether the conditions attached to the permit for a particular project have been followed.

The inspector has the right to inspect the premises concerned, factories, equipment, vehicles, livestock, documents etc., and is authorised to impose a fine of up to Rs 5,000 on any individual or institution obstructing his or her work, subject to appeal to the appointed authority. According to the authorities concerned, the inspectors will be drawn from the respective agencies under the overall responsibility of the Ministry of Population and Environment.

The agencies concerned with the environment, such as the Ministry of Industry, the Ministry of Forest and Soil Conservation and the Ministry of Water Resources, are all working on regulations necessary to carrying out their respective functions in coordination with the Ministry of Population and Environment. However, it will take some time for all the regulations to be put in place and the coordination mechanism to evolve and function.

The EIA guidelines deal in detail with monitoring and evaluation as well as spelling out the principles, types and intensity of monitoring. They also deal with indicators and the institutional aspects. Follow-up action on implementation of the guidelines has been slow, perhaps in anticipation of the umbrella legislation becoming effective.

Currently, "environmental administration is dispersed over a wide range of unrelated governmental agencies that lack intersectoral coordination and cooperation" (National Planning Commission/World Conservation Union, 1991a). The monitoring functions are spread among different agencies as provided for in the respective legislation. Much of the legislation has not been adequately designed, nor properly supplemented with supporting regulations. Hence, the monitoring work is weak and, in many cases, non-existent.

Monitoring and Evaluation Sections under Environmental Divisions.

Monitoring at the Ministry of Finance is undertaken through the Monitoring and Evaluation Division, whereas at the Ministry of Industry and Ministry of Water Resources, Department of Forests and Department of Industry/Irrigation the monitoring function is performed by the Planning Division. Within departments, the monitoring function is mostly combined with the planning function and, in some cases, with the management function. In the Department of Soil Conservation and the Department of National Parks and Wildlife Conservation, the environment function comes under the Parks and Sanctuary Management Division and Management and Monitoring Division, respectively.

Most departments have district offices which undertake the on-site monitoring. The monitoring function is usually all-embracing and is not limited to environmental aspects. In practice, the principal work is the monitoring of the development activities of the implementing agency, with environmental monitoring being a subsidiary activity only. In other words, environmental monitoring has yet to be institutionalised.

In the forestry sector, the Ministry of Forest and Soil Conservation is basically the policy and programme formulating agency, and the Department of Forests, the Department of Soil Conservation are the implementing agencies as well as the monitoring agencies in their respective areas. In certain cases, the authority has been vested in a specific project or agency such as the Bagmati Watershed Management Project, which is directly supervised by the Ministry of Forest and Soil Conservation. Apart from such exceptions, the Departments‘ jurisdictions cover the whole country. The Department of Forests, for example, is the custodian of the all the national forest areas and is supposed to preserve,

maintain and utilise the forests. The Forest Act and regulations empower the Department to take punitive action against those destroying or damaging forest property. The maximum penalty is a Rs 10,000 fine and imprisonment for one year, with minor penalties for smaller offences. The penalty is not specific to environmental damage, as it is of a generic nature dealing with forest encroachment and property damage.

The Department of Forests, the Department of Soil Conservation and the Department of National Parks and Wildlife Conservation have district offices, which are authorised by the Forest Act and regulations to undertake supervision and monitoring activities in their respective jurisdictions.

In the industry sector, the main monitoring agencies are the Department of Industry/Irrigation, and the Department of Cottage and Small-Scale Industries. Within the 1992 Industrial Policy, the Nepal Bureau of Standards and Meteorology (NBSM) has been designated as the agency for monitoring industrial pollution. Since 1994, NBSM has been continuously monitoring the effluents of tanneries, wool processing industries and distilleries.

Currently, the ministries are responsible for policy formulation and adaptation, while the departments and agencies under them are responsible for implementation and, hence, monitoring the enforcement. It should be noted that enforcement of existing provisions with regard to the environment is minimal, except in the case of the Department of National Parks and Wildlife Conservation and the Department of Forests, which have traditionally carried out some policing work in order to prevent and contain forestry encroachment and the poaching of wildlife, respectively.

CHAPTER VII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: WATER

Key Issues: Trade Effluents; Ground Water Contamination; Wastewater Treatment; Cleaning of Rivers; Water quality Management; Human Health

Policy Framework: National Environment Policy and Action Plan 1993 updated in 1998

Key Legislation: Water Resources Act, 2049 (1992); Nepal Drinking Water Corporation Act, (1988); Water Resources Act, 1992; Industrial Enterprises Act 1992; Drinking Water Regulations, 1998; Aquatic Animal Protection Act, 1960; Kathmandu Valley Development Authority Act, 1998; Town Development Act, 1998; Water Resource Regulation, 1993; Environmental Protection Act, 1996; Environmental Protection Regulation, 1997; Municipality Act, 1991; District Development Committee Act, 1991;

Key Institutions:
Ministry of Population and Environment; Ministry of Industry, Commerce and Supplies; Nepal Water Supply Corporate (NWSC); Department of Water Supply and Sewerage (DWSS); Department of Hydrology and Meteorology (DHM);

1. WATER POLLUTION

The issue of water pollution is very critical in Nepal. Studies show that waterborne disease accounts for 15 percent of all illness and 8 percent of deaths. The proportion is higher among children and much higher for infants. Recent studies show that in most parts of country the bacteriological quality of water is far from safe.

Many studies have been conducted to monitor the surface and ground water quality of Kathmandu Valley as well as other major cities of the Kingdom. In most cases, rivers maintain good chemical and biological water quality before they enter urban areas, where ecological breakdown occurs. In all cases untreated city sewage and industrial effluent increases the pollutant concentration to levels that not only destroy the self-purification capacity of the river but also the aquatic life. The extent of water pollution in and around urban areas is fast becoming a matter of grave concern.

A review of previous studies indicates that domestic wastewater is the main factor affecting river and other water bodies such as ponds, lakes and under ground water bodies. Domestic wastewater is responsible for over 90 percent of river pollutants and the remaining 10 percent is contributed by industrial, agricultural, and service industries. Shallow ground water is extremely polluted because of the lack of sewerage facilities and over 30 percent of the deep-water aquifers are contaminated with colliform bacteria. The

common practice of dumping solid waste in river and stream banks is wide spread and shows no sign of being curtailed.

Acts and Regulations on the topic include the Soil and Water Conservation Act; Nepal Water Supply Corporation Act (NWSC); Solid Waste Act 1986; the Canal (Irrigation, Electricity and Related Water Resources) Act. These Acts forbid polluting any water resources in the country, but due to lack of enforcement mechanisms, none of these Acts and Regulations has been implemented. Nepal has joined the World Conservation Union (IUCN), the World Wildlife fund, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and the Convention on Wetlands of International Importance, (the Ramsar Convention). Nepal has not yet joined the Convention on the Conservation of Migratory Species of Wild Animals (CMS or the Bonn Convention)

Over the last three decades the water pollution has become a major threat to urban environment in Nepal due to uncontrolled discharge from domestic sewage and industrial effluents. Nepal has no environmental ambient water quality standards and few laws specifically to deal with pollution, whether it is surface water, ground water of drinking water. The degradation of both surface and ground water resources has had adverse impact on the quality of drinking water for human use, as well as a harmful effect on aquatic life.

Ground Water

Ground water pollution in cities and towns has become a serious threat to public health. Major sources of ground water pollution are: seepage from septic tanks, domestic sewage, polluted rivers, and the dumping of domestic and industrial solid waste. In Kathmandu Valley, most of the shallow ground water is contaminated with pathogenic bacteria. Ground water monitoring in Kathmandu Valley reported that over 30 percent of water samples were contaminated with colliform bacteria. Another major threat to ground water in Kathmandu is land degradation of ground water recharge areas.

The water table is generally found 15 metres below the surface in the northern part of the Terai, whereas it is available near the surface in the southern parts. In the central area of the Terai, there is a high pressure artesian condition. The top water table is nearly at the surface in the Eastern Terai region, varying from 3 to 4.5 metres in some places, while it varies from 3 to 9 metres in the Dun Valleys in the Central Terai, and up to 18 metres depth in the western Terai. In Kathmandu Valley, the water table ranges from a depth of about 1 to 12 metres and a very limited number of aquifers have been reported at a depth of around 450 metres.

Watershed / Catchment Management

About 25 % of the world‘s population live in the mountain watersheds of Asia and the Pacific. The Himalayan Hindkush Mountain Ecosystem is the world‘s youngest and largest mountain ecosystem. In Nepal most of the watersheds are in a state of physical

and biological deterioration due to overexploitation of watershed resources by the inhabitants. The systematic programs of soil conservation and watershed management in Nepal started more than two decades ago when His Majesty‘s Government of Nepal established a Soil Conservation Department in the Ministry of Forest and Soil Conservation.

The soil and Watershed conservation Act, 1982 is the only Act which covers watershed management in the country. Under this Act, Section 4 deals with the measures which may be taken in protected areas while Section 10 deals with prohibited action in areas where Natural disasters occur or may occur.

Wetlands

Although Nepal is a landlocked country, it has many types of wetlands scattered throughout the mountain and Terai regions. These wetlands are associated with over 6,000 fast-flowing rivers, rivulets, streams, trench water, lakes and marshy lands, which contribute 40 percent of the annual flow of the Ganges River. Most of the lakes in the high mountain region are oligotrophic. Lakes in the Terai are oxbow. Lakes in the midland are tectonic. Severe flooding during the summer monsoon and constant seeping of river channels in the Terai has created floodplains and marshy grasslands.

In order to protect the wetland‘s aquatic life, in 1961 His Majesty‘s Government promulgated the Aquatic Life Protection Act, 1961. The Act prohibits the use of poisoning and explosive substances in water bodies, but the Act remains ineffective. Much of the legislation concerning protected areas is irrelevant to wetland habitats. The National Parks and Wildlife Conservation Act, 1973, provides a legal basis for Nepal‘s conservation programme.

Aquatic Life

The Aquatic Animal Protection Act has been in effect since 1961, yet both noxious and explosive materials are increasingly used in water bodies throughout Nepal. Under Section 4, the government is empowered to prohibit through notification in the Nepal Gazette. However, notice under this section has never been published by the government, further demonstrating the Act‘s lack of implementation.

Some resources associated with wetland flora and fauna in Nepal are summarised below:

- Some 172 species of fish have been recorded in Nepal, dominantly in the rivers and streams of the midland and highland zones.
- Ornithologists have recorded 850 species of birds throughout Nepal, of which 190 species are wetland dependent.
- Aquatic reptiles include two threatened species of crocodile: the Mugger and Gharial. The gharial is endangered throughout its range.

- Of the 370 species of mammals, birds, reptiles, fish and higher vertebrates which depend on Nepal‘s wetland habitats, around 100 species are threatened due to misuse of wetland habitats.
- Twenty-five percent of the 7,000 species of plants recorded in Nepal are aquatic. Of the 700 species of medicinal plants and 250 species of endemic plants, 27 are rare, seven are threatened and nine are endangered species of endemic plants.

2. LEGISLATION

There is no coherent legislative and administrative frame work for the conservation of water resources and the maintenance of water quality. In reality, water supply controls are spread over a miscellaneous collection of unrelated statutes and administrative regulations, as listed below:

- Water Resources Act, 1992
- Industrial Enterprises Act, 1992
- Drinking Water Regulations, 1998
- Aquatic Animal Protection Act, 1960
- Kathmandu Valley Development Authority Act, 1998
- Town Development Act, 1998
- Water Resource Regulation, 1993
- Environmental Protection Act, 1996
- Environmental Protection Regulation, 1997
- Municipality Act, 1991
- District Development Committee Act, 1991

The main concern of these legislative controls has been the provision of clean drinking water, health and sanitation schemes and prevention of communicable diseases, pollution prevention from industrial enterprises etc.

The Municipality Act of 1991 empowers Pokhara Municipality to take necessary measures to manage garbage collection and disposal, and pollution control from the lake shore. The Act also makes provisions for enforcing building norms, rules, regulations and the ability to take punitive action against defaulters. The Town Development Act, 1988 allows the town development committee to enforce land use and building regulations, and implement physical development plans and programs. The Town Development Committee also has the authority to take punitive action against those who ignore the regulations, and violate the norms and standards set by the committee. Since six Village Development Committees (VDCs) apart from the Pokhara Municipality touch the boundary of the lake, Phewa lake is subject to the Committees‘ authority derived from the District Development Committee Act, 1991.

Phewa Watershed is subjected to the Forest Act, Soil and Water Conservation Act, Water Resources Act, both the District and Village Committee Acts, Municipality Act, Town Development Act, and the Aquatic Life Act, thus each agency operates under their own legal mandate and has little concern for other agencies. This situation is continuous and is

one of the major causes for environmental noncompliance and poor legal enforcement in the watershed. This resulted in the development of uncontrolled urbanisation and inconsistent land use.

To regulate the growth of Pokhara (in which region the Phewa Tal is located), in 1973 the Physical Development Plan was prepared. This was adopted by His Majesty‘s Government of Nepal. Consequently, the Pokhara Town Development Committee was established under the Town Plan Implementation Act, 1972 to implement the plan. The political upheaval of 1979/80 and political changes of 1989 completely destroyed the last remnants of respect for land use, and building rules and regulations regarding the lakeside area were discontinued.

Random and haphazard construction activities have taken place in these areas and along the lake side, now resulting in the rapidly deteriorating environmental condition of the lake and its environment. The same people who were against the spirit of the 1973 plan regarding the lake side conservation concept, have now come up with the support for that concept. From 1973 to 1995, much water has flown through Phewa lake and land use in the lakeside area and the Pokhara valley has undergone many changes, but so far no serious effort to review and implement the 1973 plan has been undertaken. This clearly shows the government‘s unwillingness to comply with the environmental problems and enforcement.

With respect to the lake water pollution and poor solid waste disposal system, over the past few years, Phewa Lake and its adjoining catchment areas have experienced few marked changes in terms of environmental quality. In these areas tourism facilities have been established. But serious environmental issues such as lake water pollution and solid waste disposal problems have emerged. Although systematic monitoring of lake water quality is lacking, a recent study indicates that water quality in Phewa Lake is deteriorating due to increases in biological contamination.

CHAPTER VIII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: ATMOSPHERE

Key Issues: Air Pollution; Inadequate Capacity for Management of Environment; Rapid Urbanization; Natural Disasters; Vehicular pollution; Indoor Pollution; Environment Education; Human Health; Fuel Quality

Policy Framework: National Environment Policy and Action Plan 1993 updated in 1998

Key Legislation: The Environment Protection Act, 1997; Environment Protection Regulation, 1997

Key Institutions: Ministry of Population and Environment; Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation; Ministry of Physical Planning and Works; Ministry of Industry; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation

1. INTRODUCTION

Deteriorating atmospheric quality is an emerging concern both in urban and rural areas in the country. Of major concern is the change in the air and water quality in many urban areas, which is imposing significant social and economic costs on the population. The high incidence of waterborne and respiratory diseases has raised health costs and resulted in lower levels of productivity among those affected. In rural areas it is the domestic indoor pollution that causes respiratory disease and ophthalmic disorders. Atmospheric pollution is a function of anthropogenic activity as well as natural process. Anthropogenic activities such as vehicular emission, combustion of biomass and fossil fuels are largely responsible for changing air quality in urban and rural areas. Rural areas are engulfed by heavy indoor air pollution that results from combustion of biomass in the poorly ventilated houses.

In order to prevent atmospheric pollution, the Environment Protection Act was promulgated in 1996 and enforced in 1997 along with the Environment Protection Regulation, 1997. Section 7 of the Act covers the Prevention and control of Pollution.

2. INDUSTRY

Although the level of industrialisation is still in its early stages, localised air pollution problems have become significant. Industries also contribute to increase the ambient load

of air pollutants. The potentially adverse environmental impacts are compounded where a number of industries are located in close proximity or in the same region.

Depending upon the fuel type, the pollutants released from industries are Oxides of Carbon, Sulphur and Nitrogen, and particulate matter. An industrial pollution inventory carried out by the Industrial Pollution Control Management Project (IPCMP) estimated the total number of air polluting industries at 3,400 of which 47 % are in operation in the Kathmandu Valley. It is reported that the total suspended particulate (TSP) load in ambient air from the sector is 76,390 tons/year, of which 70 % is contributed by brick and allied industries, and 27 % by cement and allied industries. In general TSP load in the Kathmandu Valley atmosphere from medium and large sized industrial sectors is estimated to be 104 tons per day.

The main source of air pollution in the Valley is from the combustion of fossil fuels, and dust from industrial sites and processes. The major types of industries responsible for air pollution in Nepal are brick kilns; cement factories; metal casting and allied works.

3. VEHICULAR POLLUTION

Vehicular pollution is a major threat to public health in many urban areas like Kathmandu Valley, Birgunj, Biratnagar, and other major cities. This is mainly because of an exponential growth in the number of vehicles emitting pollutants in already-exhausted city atmospheres. According to available statistics, there are over 300,000 vehicles registered in Nepal. Out of this large number over 50 percent are two-wheelers, and out of the total population of registered vehicles, over 50 percent are running on the streets of Kathmandu Valley. The central development region has the highest traffic density of 30 vehicles per kilometre, while in the Far Western development region it is only 2 vehicles per kilometre.

So far, detailed study of atmospheric pollution of the whole country is lacking. Most of the studies were directed to assess the atmospheric condition of the Kathmandu Valley alone. Emission loads of some major pollutants such as HC, NO_x, SO^2, TSP etc. are based on information on energy use and show that for Kathmandu Valley the total emission load is around 32000 tons. According to the distribution of this value by economic sector, the household sector has occupied the topmost position (40%) followed by transport (36 %) and industry (24.2%). The share of commerce is negligible. The breakdown by pollutant type shows that CO is at the, occupying 68.5 percent, next is HC (18.2 %) followed by TSP (5.2 %). The World Bank and United Nations Development Programme funded project, Urban Air Quality Management Strategy (URBAIR), assessed that the total emissions of TSP and PM are 16565 and 4712 tons respectively, in which brick and cement industries are the main contributors while resuspension from roads and domestic sources have occupied secondary position.

Estimated Emission of Pollutants by Sector in Kathmandu Valley (1992/93)
Note: numbers following pollutants are in tons.

	Pollutants											
Sector	**CO**	**%**	**HC**	**%**	**No_x**	**%**	**SO_2**	**%**	**TSP**	**%**	**Total**	**%**
Transport	8290	66.7	3170	25.5	664	5.3	96	0.8	202	1.6	12422	100.0
Households	9632	84.9	352	3.1	461	4.1	155	1.4	739	6.5	11339	100.0
Industrial	3592	47.0	2206	28.9	498	6.5	673	8.8	668	8.7	7637	100.0
Commercial	95	73.6	6	4.7	5	3.9	7	5.4	16	12.4	129	100.0
Totals	***21609***	***68.5***	***5734***	***18.2***	***1628***	***5.2***	***931***	***3.0***	***1625***	***5.2***	***31527***	***100.0***

In all major cities the total suspended particles and respirable particle concentration is well above the World Health Organisation recommended guidelines.

In order to control vehicular emissions in Kathmandu Valley, the government has introduced a vehicular colour rating system with respect to exhaust emission standards. Green stickers for emission testing passed vehicles and red stickers for failed vehicles. This practice in Kathmandu Valley has been introduced by HMG/N since 1995. As of May 1998, nearly 40,000 vehicles were tested and, on an average 50 percent of heavy-duty diesel vehicles and 25 percent of light duty petrol vehicles failed to comply with the prescribed standards (3 percent CO and 65 HSU). However, this standard has been recently changed to 4.5 CO and 75 HSU for petrol and diesel vehicles respectively.

Among common vehicles, buses and trucks, three wheelers and two stroke motorcycles are probably the most significant contributors of air pollution. It is estimated that around 56 tons of CO, 18 tons of hydrocarbon, 7 tons of Nitrogen Oxides, 0.4 tons of Sulphur Dioxide and 0.69 tons of particulate matter are discharged daily through the tail-pipes of the vehicles in Kathmandu. The vehicles in Kathmandu Valley use 79 percent of all gasoline and 27 percent of all diesel oil consumed in Nepal. On the basis of energy utilisation, the daily pollutant load in the air of Kathmandu Valley estimated to be around 550 tons of CO, 14 tons of NO_x and 3.5 tons of SO.

4. DOMESTIC POLLUTION

Smoke from the burning of biomass fuels coupled with poorly ventilated houses poses a serious health hazards for millions of people, especially in rural areas, everyday. Indoor air pollution is a major cause of respiratory disease, imposing high economic cost in terms of lost productivity and treatment.

In rural areas, firewood, agricultural residues, and animal dung are the only fuels used for cooking and for other domestic purposes. In remote mountain areas, where electricity is not available and kerosene is beyond the purchasing capacity of most of the population, pine wood chips are used for house lighting at night. In the absence of data on fuel consumption in the domestic sector, it is difficult to project the total atmospheric emission load contributed by this sector.

5. ACCIDENTAL FIRES

During the spring and dry seasons every year, accidental fires in the Terai and inner Terrai region are quite common. Most of the houses in these areas are built using agriculture residue or dried forest foliage, so slight negligence can spark a fire causing loss of property, human life and adverse impact on environment by releasing gases, and particulate matters. The occurrence of fire disaster in residential areas (excluding forest fires) was found in 64 districts in 1994, 72 districts in 1995 and 75 districts in 1996. A comprehensive study needs to be made to estimate the adverse impact on environment and loss of property and life.

6. FOREST FIRES

After deforestation, forest fire is the most important cause of incalculable harm to extensive forest area. Even though a record of area affected and damage caused by forest fires is not available, the government has introduced fire line management to minimise the impact of fire disaster.

7. NON-POINT SOURCE OF AIR POLLUTION

Controlled fires are frequently introduced in some national parks and wildlife reserve as a part of habitat improvement. This is also an indigenous technique of pasture management. Farmers believe that burning clears dead organic matter, promotes the re-growth of green matter, and eradicates parasites. However, such activities release major Greenhouse Gases (GHGs) such as carbon dioxide, methane and nitrous oxide, and dust particulate.

Similarly, in the Terai and mountain slopes, farmers intentionally set fire to grass or shrub lands as part of soil fertility improvement and to destroy weeds, insects and fungal diseases. Although such practice helps to increase the fertility of the soil, it destroys the many endemic plant species as well as biological species necessary to balance the ecological system. Such forest/grass land fires also cause high atmospheric pollution releasing oxides of Carbon, dust particulate and other gases. It is estimated that carbon input into atmosphere due to such activities came to approximately 8.34 x 107 (min.) to 15.45 x 107 (max) tons/year during the period of 1960 to 1990/91. These differences are basically due to variations in consideration of forest areas.

Pending the formulation and enforcement of relevant detailed regulation, it is difficult to identify which government agency is responsible for specific functions of pollution

prevention and control enforcement, and the preservation of national heritage and environmental preservation. However, it is clear from the EPA that the Ministry of Population and Environment is the main agency for enforcement of pollution prevention and control, and that it can impose restrictions on the use of any material, fuel, equipment or machinery which is found to have a significant adverse effect on the environment. Likewise, the Ministry of Population and Environment can appoint environment inspectors" in order to minimise, mitigate or control pollution and enforce compliance (see above).

8. LEGISLATION

Most of industries either do not have the air pollution control equipment or it is not in functioning. Furthermore, Article 7 (1) of the Environmental Protection Act, 1997, and Rule 15 of the Environment Protection Rules, 1997 prohibits to the emission of waste in contravention of the prescribed standards, but it is not clear how it applies to atmospheric pollution through industrial emissions. The implementation of provision of the Act and Regulations is further hampered by the absence of ambient air quality standards.

The Environment Protection Act, 1997 provides that as far as the Prevention and Control of Pollution is concerned:

1. Nobody shall create pollution in such a manner as to cause significant adverse impacts on the environment or likely to be hazardous to public life and people‘s health, or dispose or cause to be disposed sound, heat radioactive rays and wastes from any mechanical devices, industrial enterprises, or other places contrary to the prescribed standards.

2. If it appears that anyone has carried out any act contrary to sub-section (1) and caused significant adverse impacts on the environment, the concerned agency may prescribed necessary terms in regard thereto or may prohibit the carrying out of such an act.

3. If it appears that the use of any types of substance, fuel tools or device has caused or is likely to cause significant adverse impacts on the environment, the Ministry may, by a notification in the Nepal Gazette, forbid the use of such substance, fuel, tools or device.

4. Other provision relating to the prevention and control of pollution shall be as prescribed.

CHAPTER IX

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: CHEMICALS AND WASTES

Key Issues: Hazardous Waste Management; Air Pollution; Water Pollution; Soil Contamination; Safety and Health; Emergency Plans, Public Liability and Compensation; Enforcement and Compliance; Education and Awareness; Social Audit of Industry;

Policy Framework: Nepal Environment Policy and National action Plan, 1993 updated in 1998

Key Legislation: Solid-waste (Management and Resource Mobilization) Act, 1987; Environment Protection Act, 1997;

Key Institutions: Ministry of Physical Planning and Works; Ministry of Industry, Commerce and Supplies; Ministry of Population and Environment; Ministry of Local Development;

1. INTRODUCTION

Solid waste is primarily an urban problem in Nepal, with localised solid waste pollution in some rural areas along the main trekking routes and semi-urban and densely populated village dwellings. The Industrial Pollution Inventory in Nepal has estimated 21,883 tons of solid waste is generated by industry annually. Generally, industrial waste is either recycled or disposed of along with domestic waste. The treatment and neutralisation of hazardous and toxic industrial waste at the source, and autoclaving of pathogenic elements in hazardous hospital waste is not in general practice, other than in some hospitals like Tribhuvan University Teaching Hospital; and this category of waste is generally dumped along with general waste. It is reported that private hospitals produce about 191 kg of hospital waste per day. Generation of waste in health institutions is approximately 5.71 kg/patient/day, out of which nearly 30 percent is hazardous by nature. Due to lack of separate provision for managing such waste, it is mixed with municipal refuse.

2. HAZARDOUS WASTE GENERATION

A wide range of hazardous waste is being generated by many industries in Nepal. The amount of hazardous waste generation is not very substantial at present. However, due to inadequate facilities, and lacking a clear mandate for safe disposal, hazardous waste management has become a growing problem in the country. Industries producing dry batteries, solvent and metal based paints, film processing industries, electroplating

(mostly small cottage industries) etc. are operating in the country and producing hazardous waste. These industries are not separately categorized under the hazardous waste producing industries. They are included in the group of highly polluting industries. The waste produced by these industries is either directly disposed in surface water or discharged on land. Hospitals, health clinics, pharmaceutical establishments, , as well as research and pathological laboratories are also other major source of hazardous waste in the country. Rule 15 of the Environmental Regulations forbids the emission of any hazardous waste above the standards set for such waste. Clear regulations or codes of practice to dispose such hazardous waste, facilities and infrastructures are lacking.

The Solid-waste (Management and Resource Mobilization) Act, 1987 has made provision for the establishment of a solid waste mobilisation centre. The function and duties of the Centre are to prevent hazardous solid waste by classifying them and to provide training relating to the management of solid waste and environmental cleanliness.

Expired organochlorine pesticides are another source of hazardous waste. At present, over 50 tons of such hazardous pesticides are waiting to be safely disposed. As the country has no mining of coal or other minerals, nor the smelting establishment for metals, the problem of hazardous waste disposal from these sources does not exist.

3. WASTE MINIMISATION/WASTE TREATMENT AND DISPOSAL

Some industries are using good pollution control measures. These plants include plastic, polyethylene and PVC, paints, and flour milling industries. The control measures and practices observed in use in these industries include exhaust fans, bag filters, ventilators, precipitators and recycling of both wastewater and scrap materials. However, the majority of industries is without any pollution control measures. Recently, the government under the assistance of UNDP/UNIDO has established wastewater treatment facilities for tanning industries operating at Birgunj.

CHAPTER X

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: FORESTRY

Key Issues: Key Issues: Forest Depletion; Forest Management; Wildlife Management; Livelihood of Local Peoples; Re-generation of Forests; Eco-development; Environment Education; Enforcement and Compliance; Public Participation;

Policy Framework: National Environment Policy and Action Plan 1993 updated in 1998

Key Legislation: Environmental Protection Act, 1997; Environment Protection Regulations (EPR, 1997) and its 1st Amendment 1998; National Environmental Impact Assessment Guidelines; Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982);

Key Institutions: Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resources Policy, regulation and management of the of water resources, irrigation works, electricity, flood control;

1. INTRODUCTION

Horizontal and vertical topographic dissimilarities have endowed Nepal with unique climatic diversity, thus providing habitat for different animal and plant species. The vegetation zones of Nepal can be divided into four climatic regions. The Terai and inner Terai regions are dominated by deciduous vegetation. The main species are sal (Shorea robusta), khair (Acacia Catechu), simal (Salmaria malacarica), and sisoo (Dalbergia Sisoo).

2. FOREST CONSERVATION

Following the political change in 1950, successive governments introduced several legislative measures for a fairer distribution of the nation's natural resources, better managing forests and controlling deforestation. These measures were:

- The Private Forest Nationalization Act, 1957.
- The Forest Act, 1961. This was mainly concerned with forest administration and defined the duties of Forest Department (FD), forest offences and prescribed penalties.
- The Forest Preservation (Special Arrangements) Act, 1967. Forest Preservation Special Courts were established. The Act and the Forest Preservation Special Courts were important efforts in forest conservation and assisted the Forest Department (FD) in its policing functions.
- The Birta Abolition Act, 1959, the Land Reform Act, 1964 and the Pasture Nationalization Act, 1974. These acts further reinforced legislation regarding government ownership over most forest/forest land, and limited individual forests and pastures holding.

However these measures, which concentrated on law enforcement methods, proved to be coercive in nature and were designed to dislocate the local people from the forest. People's distrust in the government motives grew and alienated them from the forest. Deforestation further accelerated.

Many policy gaps have been noted in the area of forest conservation through Forest User Groups (FUG's). Most notably:

- *Involvement of women and the poor*: Although it is in the policy, present legislation has not fixed any quota for the representation of women and the poor section of the community in FUG committees.
- *Authority to penalise non-FUG offenders:* Present legislation does not clearly specify the authority of FUG's to be prosecuted if someone outside a FUG commits a forest offence in a community forrest.
- *Number of households in FUG's*: It is not practically possible to handle the large number of households in FUG's. This is a special problem in Terai, where the forests are claimed by thousands of households. Existing legislation does not specify the maximum number of households in FUG's.
- *No standard pattern for Operational Plans*: Existing legislation does not prescribe standard patterns for operational plans. In the absence of a standard pattern, Operational Plans differ greatly in terms of content, quality and quantity. Some Operational Plans do not possess the required

information necessary to implement the plan such as benefit sharing mechanisms among the users.

- *Dissolution of FUGs*: Due to various reasons, if FUG‘s decide not to continue with the Community Forests program, the present legislation does not have any provision for the dissolution of FUG‘s.

Nepal‘s total forest area is 5.46 million hectares or 37 % of the country‘s total area. Of this total area, 62 % is eligible for transfer to community forests (Forestry Master plan, 1988). Some 500,000 hectares of forest areas in the country have already been transferred and are being managed as community forests by 586,000 households organized in 5,350 Forest User Groups.

The Forest Act, 1992 and the National Parks and Wildlife Conservation Act, 1973 (amendment 1993 with the inclusion of buffer zone concept) have been found effective in involving local people in forest management and species conservation. Provisions for benefit sharing (see below) have also encouraged the local people to participate in species conservation and have helped resolve to some extent conflicts between parks management and the people living in and around the area.

Nepal‘s community forestry initiatives so far have, however, concentrated in the mountain regions of the country. Far fewer examples, of successful replication of community forestry activities are to be seen in the Terai Region. Implementation of the community forestry programme has lagged behind much in the Terai. The reasons remain unexplored and unidentified. Thus, to promote the development of community participatory forestry in the Terai region of the country, it is important to identify and understand the constraints encountered in developmental efforts so far, as well as the reasons for the successful examples in community participatory forestry development, wherever they exist, in the Terai.

Sustainable Use of Forest

Nepal is a developing country where most of the population are subsistence farmers and live in the rural areas. As the rural livelihood depends on agriculture, which in turn is closely linked with forests and other natural resources, the development of forests is also closely associated with the development of rural livelihood. Therefore the concept of Community Forestry (CF) is not only related to conserving forest ecosystems and meeting the basic needs of forest products for the community, but also closely related to the well being of the people. The challenge is to create opportunities so that all benefits – tangible and intangible – from forest use can be optimised, while conserving the integrity of the forest ecosystem**.**

Mining

Several laws and regulations govern mining.

- *Mineral (Amendments and Unification) Rules 2018 (1961)*
- *Gas-Oil Thekka (contract/Lease) Rules, 2015 (1958).*
- *Nepal Petroleum Act 2040 (1983) and*

- *Mines and Minerals Act 2042 (1985)*

The above mentioned rules prescribe conditions to be observed by the licensees. For example, the Mineral Rules allow trees to be cleared for mineral exploration, provided the prescribed fee is paid to the relevant government authority. Similarly, Petroleum Mining is specifically dealt with by the *Nepal Petroleum Act 2040 (1983)* (NPA). This Act requires that any activities in relation to mining should be done without causing damage to forest or other natural resources, or any pollution to the environment. The Department of Mines and Geology (DMG) is responsible for administering all mining activities. In cases where mineral deposits are located within a forest area, the Department of Forestry has exclusive jurisdiction. Such independent lines of authority are not conducive to having an integrated approach to conservation issues.

National Parks, Protected Areas and Wetlands

Every country has some kind of nation-wide land use planning, even if it only exists in its land use policy statement or guidelines. In the forestry sector, there is a tendency to separate forestlands from other land uses by zoning, which provides a practical framework. Forest lands are classified into broad functional categories, such as protected, production forest, national parks, wildlife sanctuaries, and so on.

In Nepal, the conservation of ecologically valuable areas and their indigenous wildlife is provided for by the *National Parks and Wildlife Conservation Act (1973)* (NPWCA) which is administered by the Department of National Parks and Wildlife Conservation (DNPWC) within the Ministry of Forest and Soil Conservation (MFSC).

A necessary amendment in the *National Parks and Wildlife conservation Act 2029* was made in 1973 considering the growing need of the society. The Buffer Zone Regulations were made in 1992, and subsequently approved and gazetted. About 731,000 hectares of land is covered by natural and manmade wetlands located in different geographical regions of the country. These wetlands are very rich in aquatic life, and water dependent birds and animals. The habitats of aquatic life are protected by the *Aquatic Animals Protection Act 1961* (AAPA). Section 3 of the AAPA renders punishable any party introducing poisonous, noxious or explosive materials into a water source, or destroying any dam, bridge or water system with the intent of catching or killing aquatic life.

Whilst a few wetlands of international significance (e.g. Rara, Shey Phoksundo, Tilicho etc.) are located within the existing regime of national parks, there are no specific legal mechanisms for the scientific identification, protection and management of wetlands in general, so that wetlands outside the national park system remain unprotected.

3. LEGISLATION

The decline in forestry resources has been aggravated by the failure of the government to provide for a workable system of forestry management. In the past, the government has

proposed many legislative measures for the forestry sector, but the role of the indigenous management systems in forestry management was never recognised. Some of the major legislative measures taken are:

- Private Forest (Nationalisation)Act, 1956
- Forest Act, 1961
- Forest Protection (Special Arrangements) Act, 1967
- Forest Products (Sales and Distribution)Rule, 1970
- Panchyat Forest Rule, 1978
- Panchyat Protected Forest Rules, 1978
- Leasehold Forest Rules, 1978
- Private Forest Rules, 1984

Past efforts at forest management were heavily centralised and overly bureaucratic, and the involvement of local people was perceived as a threat to forest. Efforts were made to keep the villagers out. A similarly narrow approach was taken with regard to conservation, where emphasis was on maintaining and planting trees. The main emphasis was to keep villagers out and increase the stock. However, this concept changed with the introduction of *Master Plan for the Forestry Sector* (MPFS). This was endorsed by HMG in 1989 and proposed a comprehensive strategy for forestry management in Nepal. The approach focused on establishing procedures to enable a hand over of forests to user groups and the private sector, based on a partnership between the MFSC and local forest users that encourage management of all aspects of forests – not just trees, but shrubs, grasses, and other forest base resources.

HMG's current policy is to promote community forestry in the Hills, where forests form an integral part of farming system and are often of high environmental value in terms of stabilising soils and protecting watersheds. However, due to the high potential of the forest sector in the Terai region, a leasehold management concept is in progress, but there are concerns, since the responsibilities of potential leasehold concessionaires has not yet matured.

4. NATIONAL PARKS AND WILDLIFE

The National conservation Strategy for Nepal 1987 (NCS) and Nepal Environment Policy and Action Plan 1993 (NEPAP) are long term policy guidelines concerning wildlife conservation and management in Nepal. On the basis of these Acts and Regulations are framed to achieve stated objectives. The Master Plan for Forestry Sector (MPFS) and National Periodic Five-Year Plans of HMG/N Planning Commission are long and short term plans respectively to develop and formulate programs for wildlife conservation and management.

The *National Park and Wildlife Conservation (NPWC) Act,* 1973, is the main Act related to conservation of wildlife and protected areas in Nepal. It provides the basis for the establishment and administration of protected areas and the conservation of wild animals, birds and reptiles and their respective habitats.

The Act stipulates two objectives of the protected areas. Primarily: Protection of sites or landscapes of scientific, geological, or aesthetic importance together with associated flora and fauna. Secondary: Development of such areas for tourism.

Sections 2 thru 6 deal with the different management aspect of Parks and Wildlife. The NPWC Act has been amended four times addressing the changing needs for wildlife conservation and management in Nepal. The Act is administered by the Department of National Parks and Wildlife Conservation (DNPWCA). The NPWCA prescribe five categories of protected areas:

- National parks;
- Wildlife reserves;
- Controlled nature reserves;
- Hunting reserves; and
- Conservation areas.

A strict nature reserve is an area of unusual ecological significance set aside for the purpose of scientific study. National Parks and controlled nature reserves are to be managed as far as possible without human intervention.

The NPWCA also allows for the protection of parks and reserves by soldiers of the Royal Nepalese Army. A research and management division within the DNPWC coordinates wildlife research and the assembled data is used to formulate management plans for each protected area. The management of each declared area is enforced by a set of administrative rules. The *National Parks and Wildlife Conservation Rules (1974*) prescribes various regulations as to the use of all protected areas. More site-specific administrative rules are the *Royal Chitwan National Park Rule (1974), Himalayan National Parks Rule (1979)* and the *Wildlife Reserve Rules (1977).*

Public participation in conservation programmes has been facilitated by the enactment of the *King Mahendra Trust for Nature Conservation Act, 1982* (KMTNC), which established the Trust as a statutory body to promote nature conservation in Nepal.

The duties of the KMNTC include:

- To conserve, promote and manage wildlife and other natural heritage,
- To make necessary arrangements for the development of national parks and reserves; and
- To undertake scientific research into wildlife and other natural resources.

CHAPTER XI

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: BIODIVERSITY

Key Issues: Loss of Biodiversity; Forest Degradation; Protection of endangered Species; Land Degradation; Environment Education; Capacity Building; Enforcement and Compliance; Ecosystem Development; Peoples Participation

Policy Framework: National Biodiversity Conservation Strategy in 1997;

Key Legislation: The Wildlife Conservation Act (1958), National; Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Laws and Regulation on the Conservation of Species Plant Protection Act, (1972); Laws and Regulation on Protected Area Wildlife Reserves Regulations (1977); National parks and Wildlife Conservation Act through the amendment of 1993; Patent, Design and Trademark Act, 1965; Industrial Enterprises Act 1992; Foreign Investment and Technology Transfer Act, 1992; Company Act 1997; Private Forest Nationalization Act, 1956; Lands Act, 1965; the Forest Protection Act, 1956; Ancient monuments Protection Act, 1956; Wild Life Protection Act, 1957; Aquatic Species Protection Act, 1961; Malaria Eradication Act, 1965; Contagious Diseases Act, 1965; Forest Protection (Special Arrangements)Act, 1967; King Mahendra Trust for Nature Conservation Act, 1982; Soil Conservation and Watershed Management Act, 1982; and Solid Waste Management and Resource Mobilization Act, 1986.

Key Institution: Ministry of Forestry and Soil Conservation, Department of National Park and Wildlife Conservation; Ministry of Population and Environment; Ministry of Agriculture; National Agriculture Research Council

1. INTRODUCTION

Compared to Nepal‘s size, which is about 0.1 percent of the total landmass of the world, and 0.3 percent of Asia, it is endowed with rich Biological Diversity. The country‘s bio-geographic settings, and horizontal and vertical dissimilarities are the major determinant for the habitat of different flora and fauna in the country. The country has about 54 percent of land surface under some sort of vegetation cover (forested area 37 %; shrub land and degraded forest 5 % and grassland 12 %). Seventy-five vegetation types and over 1500 fungi species have been identified. Estimates on numbers of plant and animal species vary, but there are over 6,500 species of flowering, and over 300 species of lichen. About 370 species of flowering plants are considered endemic to Nepal and about 700 species are known to possess medicinal properties. Regarding faunal diversity, there are about 175 mammal species, 836 bird‘s species, 147 species of reptiles and

amphibians, 180 species of fish, 640 species of butterfly, and approximately 6,000 species of moth. Of these, 26 mammals, nine birds, and three reptiles are either are endangered, vulnerable, or threatened.

2. BIODIVERSITY

With the aim of protecting representative samples of natural eco-systems, 14 protected areas of different categories have been set aside, covering more than 14 percent of the total area of the country. For example: national parks, wildlife reserves, conservation areas, and hunting reserves.

A total of 118 ecosystems have been identified in different physiographic zones in Nepal and these can be classified into three regions:

- *Terai and Siwalik ecosystem*: 23 ecosystems. The tropical hill sal forest is the most prominent Siwalik Ecosystem.
- *Mid hill Ecosystem*: Ecosystem range from 18 ha cedar forest to 81,200 ha of western Nepalese mountain oak.
- *Highland Ecosystem*: Upper sub-alpine rhododendron-birch and lower sub-alpine Abies-spectabilis are the most commonly occurring ecosystem.

Factors causing the loss of Biodiversity

Anthropogenic activities are the main factor for loss of biodiversity in both terrestrial and aquatic habitats. Species that survive such threats are likely to lose genetic variations as the number of individuals in a population is reduced and populations are increasingly isolated from one another. The creation of protected areas assures protection of certain species. Such protected areas, however, are usually surrounded by damaged habitat, making them habitat islands.

Loss and fragmentation of habitat

Loss and fragmentation of suitable natural habitat is the main threat to bio-diversity conservation in Nepal. Habitats outside protected areas are under continuous pressure from human activities, and they are being degraded and converted into agricultural land. Natural habitats from the eastern Terai, where the human density is high, are all but lost. Fragmentation and loss of habitat have restricted the distribution of some species such as tigers, elephants, rhinos and so on. In addition, the fragmentation of habitat results in greater edge among species, increasing predation as well as competition from exotic and pest-species, which gradually invade the interior of the habitats.

Habitat fragmentation and loss have also resulted in a dwindling population of Gangetic river dolphins in Nepal‘s‘ river system. Many national parks and reserves are too small and too isolated to maintain population of many species. Increasing grazing pasture from

livestock has largely displaced wild herbivores during monsoon grazing periods in mountains. Red panda have been adversely affected by grazing disturbance, and, similarly, loss of suitable habitat for wild water buffalo has restricted the species within 175 km^2 of the Koshi Tappu wild life reserve.

Poaching and over-harvesting

Poaching is another threat to biodiversity conservation in Nepal. Poaching of rare species such as the tiger, rhino, bear, musk dear, snow leopard, gharial and other species occurs because of the value of their bones, skins and other derivatives.

3. NATIONAL COMMITMENT ON CONVENTION ON BIOLOGICAL DIVERSITY

The role and importance of all life forms for environmental management and for their possible use for socio-economic development of the country is understood by Nepal. Its sustainable use would be instrumental in improving the living standard of the people. Its multi-fold benefits prompted Nepal to be a Party to various legally binding international instruments such as the Ramsar Convention, CITES, ITTO, the Plant Protection Agreement, Conventions on Climatic Changes, Desertification and Biological Diversity. As a result, conservation of biological diversity in Nepal is not only a national priority it is also a global commitment. However, there is a need for developing mechanisms for sustainable use of biological resources so that Nepal can be in a position to allocate adequate funding for biodiversity protection and be able to attain the goals of sustainable development.

Nepal signed the Convention on Biological diversity (CBD) during the Earth Summit in Rio de Janeiro on 12 June 1992, and ratified it in the December of 1993. The major focus of the Convention on the need for conservation of biological species, sustainable use of its components, and the fair and equitable sharing of the benefits as its objectives were the elements that convinced Nepal of the value of its ratification. There are also other relevant provisions for strengthening species conservation, and various activities are to be implemented to meet the international obligations, which in turn would contribute to conserve Nepal‘s biodiversity.

4. NATIONAL CONSERVATION STRATEGY

The National Conservation Strategy for Nepal endorsed by His Majesty‘s Government of Nepal in 1988 was a result of World Conservation Strategy, 1980. The conservation spectrum emphasized by this strategy is wise use, protection, preservation and restoration.

5. NEPAL ENVIRONMENTAL AND POLICY ACTION PLAN

The NEPAP was endorsed by the government in August 1993. The plan forms part of the government's attempts to incorporate environmental concerns into the Kingdom's development process. To implement participatory bio-diversity conservation nation-wide, buffer zone management concepts were introduced in the *National parks and Wildlife Conservation Act* through the amendment of 1993.

6. GENETIC RESOURCE MANAGEMENT

A number of governmental and non-governmental organizations are actively involved in genetic resource management in Nepal. The government institutions are:

- *Ministry of Forest and Soil conservation:* Management and utilization of Nepal's Forest resources.
- *Ministry of Agriculture:* formulates and implements policies and programs for the conservation and utilization of plant resources.
- *Ministry of Population and Environment:* Responsible for acting as a national node in implementing international conventions and agreements. There are different departments under each ministry to conservation and management of genetic species.

A number of semi-government and private institutions are also involved in the conservation and utilisation of plants products:

- The Forest Products Development Board, for utilization and plantation activities.
- The Herb Production and Processing Company Ltd: operated herbal farms in different ecological regions.
- Nepal Agriculture Research Council: conduct research on domestic plant species.

7. ACCESS TO BIODIVERSITY

The international community has long recognized the importance of conserving biological diversity as a necessity for society. Nepal responded to the call of the first two objectives of the International Convention on Biological Diversity (CBD) i.e. the conservation, and the sustainable use. However there has not been a tangible effort to address the third objective of CBD i.e. Nepal's genetic resources have been openly accessible since the country opened its frontiers to foreigners in the early fifties.

Benefit sharing to the providers of genetic resources has not yet been realized as a priority issue even after the Earth Summit. Currently, there is a serious lack of legal provisions and administrative mechanisms to address the issue of benefit sharing in spite

of the fact that the biological resources of Nepal are harnessed continually for the international market.

Exploration and access to Nepal's biological species has been on-going since the early 19th century, and economic benefits of those explorations have never been shared with the country of origin. However, the valuable scientific study reports are available to provide the basis for preparing national inventories of biological resources.

At the national level, the issue of access and benefit sharing is generally eclipsed by the need to grow more food; and it has encouraged the farmers and the government to go for high yielding varieties by replacing local genetic resources. Many traditional cultivars of rice like Tauli and Thapachinia are vanishing from general cultivation practice. So far, legal tools for biodiversity conservation are directed towards protection, conservation and sustainable use of resources. The National Biodiversity Action Plan, which is currently under a process of finalization, does not cover the issues related to the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

8. TRADITIONAL KNOWLEDGE AND PRACTICE

The accumulation of an indigenous knowledge system in mountain culture is a human struggle to survival in harsh and remote environments. The rugged nature of the mountains, a constant struggle with gravitational forces, limited access to arable land and diversified biological resources contribute to the life and livelihood of people. Indigenous knowledge of remote people therefore turns out to be unique to their own cultural environment. The instinct to survive in constant struggle with nature over centuries has forced the people in remote mountain terrain to cultivate indigenous species that has also evolved to survive in such environmental conditions. For example, certain species of paddy are cultivated at a world record of 2800 m altitude. Examples are abundant in the farming system of Nepal to emphasise the fact that preserving genetic variety is pointless unless the farming system that produced it is also preserved, along with its climate and soil and the accumulated knowledge of its cultivation and use.

Traditional knowledge of local fauna and flora is abundant with rural people, who constitute over 90 percent of Nepal's 26 million people. Villagers have developed safe methods to use wild plants – even the toxic aroid tubers (*Arisaema*) by removing toxic substances (Calcium oxalate), *Acinitum ferox* is turned into an administrative drug after its detoxification using cow urine. Only a very experienced individual, who is highly respected in such a community, carries out the detoxification process.

Knowledge of the behaviour of birds and mammals is also widely used in farm management. The trans-Himalayan migration of the Demoiselle Crane is used to plant cucumber (*Cucurbitaceae*) seeds; the singing of cuckoo birds indicates the ripening of *Myrica* fruits; similarly, the croaking of frogs heralds the coming monsoon. Thus, environmental indicators are encapsulated in the indigenous knowledge system, and needs to be documented so that the wisdom inherent therein can be respected and rewarded.

The indigenous knowledge system in the highlands of Nepal is slowly deteriorating, because cultural assets and traditional methods remain marginalised in the process of modern development planning and implementation. Similarly, modern hospital facilities and the influx of modern medicine and pharmaceuticals has replaced traditional Tibetan medicine in the area.

9. INTELLECTUAL PROPERTY RIGHTS

Intellectual property rights in Nepal are covered by the *Patent, Design and Trademark Act, 1965.* This Act underwent amendment in 1987. In 1965, the *Copyright Act* was also enacted. These two acts on intellectual property remain presently in force.

Other Acts related to intellectual property system in Nepal are the *Foreign Investment and Technology Transfer Act, 1992*, which deals with technology transfer and trademark licensing. *The Industrial Enterprises Act, 1992,* deals with the production and marketing of products, and the *Company Act, 1997,* protects company names.

The *Patent, Design and Trade Act, 1965*, provides for the definitions of the following: ~~–ri~~ghts of the property holder", ~~–a~~pplication", ~~–e~~xamination", registration and renewal procedures; ~~–te~~nure of protection"; and ~~–a~~ctions for violation". Trademarks and Service Marks registered in Nepal are protected by this Act.

The Department of Industry (DOI) is responsible for the administration of industrial property as per the *Patent, Design and Trademarks Act, 1965*. The DOI is the national focal point for the World Intellectual Property Organization (WIPO). In the field of Agriculture and plant species, the Ministry of Agricultural in association with National Agriculture Research Council (NARC) is responsible for the protection of plant varieties.

10. LIVING MODIFIED ORGANISMS (LMO)

In the quest to increase productivity, many new techniques and exotic species are being introduced in urban areas. However, there is no information in the field of Living Modified Organism/Genetically modified Organism (GMO). Article 15 of the Convention on Biological Diversity (CBD) deals with access to genetic resources, and parties to the convention are required to grant access on mutually agreed terms, subject to the provisions of that Article. Access to genetic resources shall be subject to the prior informed consent of the party providing the sources. No policy has been formed in this direction by Nepal.

11. CONVENTION ON THE INTERNATIONAL TRADE IN ENDANGERED SPECIES (CITES)

Nepal became a contracting party to this convention in 1975. It provides for the international coordination, through the acceptance of obligations under international law, of trade and control of wild fauna and flora whose conservation status is unfavourable.

The objective of the treaty is to arrest, reduce or eliminate the international trade in those species whose numbers or conditions suggests further removal of individuals from its natural habitat would be detrimental to the species‘ survival.

Prior to the convention, the control of trade of wild fauna and flora operated through the *National Parks and Wild Life Conservation Act, 1973*. This provided a regulatory mechanism to conserve endangered species and their habitats by indirectly restraining the trade of such species. Hunting of such animals is circumscribed. The *Forest Act, 1993,* further emphasised the control and management mechanism of forest species and endangered fauna and flora.

The Convention on Biological Diversity

The objective of the Biodiversity Convention was to conserve the flora and fauna that are useful to humans, to the sustainability of ecosystems, and for the maintenance of life-supporting systems in the biosphere. The Nepalese parliament ratified the convention in 1993, and has taken policy and legal measures for the conservation of biodiversity in compliance with the convention. As has been explained earlier, the *National Conservation Strategy Implementation Project*, run jointly by IUCN, The World Conservation Union, the National Planning Commission of Nepal, and the Department of National Parks and Wildlife Conservation is leading the push toward developing policies relating to the biodiversity conservations.

As regards the legal instruments, the *Aquatic Animals Protection Act 1961*, *National Parks and Wildlife Conservation Act 1973, Water Resources Act 1992* and *Forest Act 1993* have been promulgated and enforced. There is sufficient legal ground for the conservation of aquatic and other forms of biological diversity both ex-situ and in-situ. The *Aquatic Animals Protection Act 1961* provides legislative insulation for the habitats of aquatic life and provides punitive actions against individuals involved in the poisoning of aquatic life, by using explosives in water which is the source of aquatic life.

Similarly, the *National Parks and Wildlife Conservation Act 1973* prohibits, *inter alia*, hunting, building houses or any structure, cultivation, grazing, watering domesticated animals or birds, mining or firing any site or sites within protected areas. The *Forest Act 1993* has empowered the Department of Forest and Department of National Parks – leading agencies in the conservation of biodiversity.

Compliance for the enhancement of the environment by His Majesty‘s Government of Nepal in devising legal instruments is appreciable. The legal provisions to a large extent are enumerated by needs. They have also evolved to attract funds for the conservation of resources.

CHAPTER XII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: WILDLIFE

Key Issues: Loss of Wildlife; Park Management; Forest Degradation**;** Illegal Poaching; Man-Animal Conflict; Livelihood for Local Peoples; Local Peoples' dependency on Forests; Ecodevelopment; Peoples Participation

Policy Framework: Nepal Environment Policy and Action Plan II, 1993 updated in 1998

Key Legislation: Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977); Soil and Watershed Conservation Act, (1982);

Key Institutions: Ministry of Agriculture and Cooperative, Agrarian production, animal husbandry, soil agro-technology, and plant quarantine, fertilizer and pesticide regulating; Ministry of Defence Surveillance of national parks and wildlife reserves, Disaster Rescue; Ministry of Education and Sports; Ministry of Forest and Soil Conservation; Ministry of Land Reform and Reform of land tenure, land management policy; Ministry of Local Development Resource conservation and integrated rural development, and decentralization, solid waste management; Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation;

1. WILDLIFE PRESERVATION

A number of species–specific conservation programmes have been implemented by HMG in collaboration with various international agencies including project to conserve gharial, the Royal Bengal tiger and Musk Deer. The Gharial conservation Project run in cooperation with the Frankfurt Zoological society began in 1978. It is based at Kasara, the headquarters of the Royal Chitwan National Park.

The Tiger Ecology Project ran from 1973 to 1981. It was supported by the Smithsonian Institute (USA) and the World Wide Fund for Nature (WWF). A number of studies on

tiger behaviour and ecology were completed by Nepalese and American researchers. As a follow-up to the Tiger Ecology Project, a Long Term Tiger Monitoring Project was initiated in 1980 and continues today in association with the Smithsonian Institute. HMG has recently initiated a Musk Deer Project.

Habitat

Loss and fragmentation of suitable natural habitat is the main threat to bio-diversity conservation in Nepal. Habitats outside protected areas are under continuous pressure from human activities, and they are being degraded and converted into agricultural lands. Natural habitats from the eastern Terai region, where the human density is high, are all but lost.

Fragmentation and loss of habitat has restricted the distribution of some species such as tigers, elephants, rhinos and so on. In addition, the fragmentation of habitat results in greater edge among species, increasing predation as well as competition from exotic- and pest-species, which gradually invade the interior of the habitats.

One real example of fragmentation and loss of habitat, which resulted in depletion of biodiversity, is worth mentioning here. The portion of the East-West highway passing through the Bardia National Park has resulted in many accidents and created a border in the interior of the Park. Habitat fragmentation resulted, and restricted the migration and mobility of many species and has increased the incidence of wildlife damage to human life and property. Such people-wildlife conflicts have frequently given a negative impression of wildlife conservation; e.g. elephant damage in Nepal during migration from India to Nepal.

Habitat fragmentation and loss has also resulted in a dwindling population of Gangetic river dolphins in Nepal‘s river systems. Many national parks and reserves are too small and too isolated to maintain the population of such species. Increasing grazing pasture from livestock has largely displaced wild herbivores during monsoon grazing periods in mountains. Red Pandas have been adversely affected by grazing disturbance; similarly loss of suitable habitat for wild water buffalo has restricted the species within 175 km^2 of the Koshi Tappu Wildlife Reserve.

Poaching

The poaching of wild animals has always remained a serious problem in all protected areas. The rise in price of rhino horn and tiger bones in the world market is one of the reasons for poaching of these species in the Terai National Parks. In the Himalayan or mid-mountain area poaching is mostly for musk pods of a musk deer or for the pelt of snow leopards or civet cats. Poaching alone killed 10 rhinoceros in 1992, 4 were killed in 1993 and in the same year tigers killed four young rhinoceros.

Records of poaching show that poachers have developed and use different methods of poaching. Among the commonly used methods are pitfall digging, tow-chains, poisoning and firearms. Pitfall is found to be most widely used method followed by tow-chains to trap the animal.

Most poachers are from local communities. Depending on the animal species, the group size of poachers varies from two to five or six. Poaching records show that the prime target of the poachers and the great one horned rhino or musk dear for its pod. The lure of monetary gains, the hunting traditions of some ethnic groups living in and around parks/reserves and their subsistence economy have affected the animal population in protected areas.

With the financial and other support of the WWF Nepal Program, the Anti Poaching Unit (APU) was formed in December, 1992, and actively protects the wildlife in and around the protected areas.

2. PROTECTED AREAS

In order to conserve biodiversity in Nepal, a wildlife conservation plan was introduced in the early 1970s. Its purpose was to conserve biodiversity through the designation of protected areas. Such a strategy has provided effective for the protection and long term conservation of threatened species in-situ. Over the last two decades an extensive network of natural parks and protected areas has been developed, covering more than 23,000 km^2, equivalent to almost 14 percent of Nepal‘s total land area.

National Parks

The new legal arrangement on buffer zone management, based on the National Parks and Wildlife Conservation Act, 1973 has opened new avenues in resolving conflicts between the park management and the local people. Particularly, conflicts related to access or use of forest resources to meet the requirements of the people living near protected areas, and in preserving agricultural yield and livestock from the wild animals. The Act also introduced the concept of revenue sharing and provided that 30 to 50 per cent of the total revenue generated in the protected areas shall be used for community development activities. This was in order promote local people's participation in park management and ultimately in biodiversity conservation. Accordingly, the Buffer Zone Management Rules, 1996 were brought into force. This concept has also prompted Nepal to strengthen eco-tourism in the protected areas. The benefit sharing mechanism has contributed to resolving the prevailing conflicts on species conservation.

There are eleven national parks of various sizes ranging from 106 sq., km (Rara) to 3555 sq. km. (Shy Phoksundo). The Royal Chitwan National Park is the oldest park – established in 1973, and designated as a World Heritage Site in 1984. This Park is famous for prehistoric one horned Rhino and Majestic Royal Bengal Tigers.

The Rara National Park is the smallest Park of Nepal situated in Northwest mountain region containing the country‘s biggest lake: Lake Rara (10.8 km) at an elevation of 2990 m.

The Shey-Phosksundo is situated in the mountain-region of Western Nepal and it is the largest national park in the country. The park provides prime habitat for snow leopards and blue sheep.

The Langtang National Park is situated in the Central Himalayan region. It represents the best example of graded climate conditions in the Central Himalaya.

The Royal Bardia National Park is situated in the mid-far western Terai region. This park provides an excellent habitat for endangered animals like the rhinoceros, Bengal tiger, wild elephant, black buck etc. Endangered birds include the Bengal florican, lesser florican and Sarus crane.

The Khapatad National Park, established in 1984, is located in the mid-mountain region of Far-Western Nepal at about 3000 m elevation. The Park covers the unique mid-mountain ecosystem of Western Nepal.

The Sagarmatha national Park is located in the north-east of Kathmandu. This Park includes the highest peak in the world Mt. Sagarmatha (Everest). The mountains of Sagarmatha National Park are geologically young and broken up by deep gorges and glacial valleys. The Park is populated by approximately 3,000 of the famed Sherpa people.

The Makalu-Barun National Park is the only protected area in Nepal with a Strict Nature Reserve. The park has some of the richest and most unique pockets of plants and animals in Nepal; elsewhere they have been lost to the spread of human settlements. Amongst others, the wildlife includes endangered red panda.

Zoological Parks

The King Mahendra Trust for Nature Conservation (KMTNC) was established in 1982 as an autonomous, non-profit and non-governmental organization in accordance with the *King Mahendra Trust for Nature Conservation Act, 1982.* It has successfully launched over 60 projects in the field of nature and biodiversity conservation, and sustainable rural development. The Trust is also involved in ex-situ conservation of biological species. HMG entrusted the management of the Central Zoo to the trust – the only zoo in Nepal – and the Trust has prepared and implemented a management plan for improvement.

The Central Zoo contains a total of approximately 505 animals. There are 230 mammals of 31 species, 240 birds of 53 species, and 35 reptiles of 16 species. Of them, there are 67 mammals, 14 birds and 10 reptiles, which are considered as vulnerable in their wild habitats.

The Zoo has been promoted as an education centre of excellence for *ex situ* conservation of endangered wildlife, and has planned to increase their population, without changing the genetic constituents.

3. TRADE IN ANIMAL PARTS

Nepal is a state member of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and has been very active in CITES implementation since its inception in 1975. The Department National Parks and Wildlife Conservation is the management authority for CITES within the country. It provides for the certification of wildlife to be exported in conformity with the CITES Appendices. There are 40 species included in the CITES appendices, and 22 species are listed under IUCN's threatened species category.

Rhino horns, tiger bones, and musk pods are the major items smuggled out of Nepal, though it is obviously hard to get exact figures.

4. BREEDING IN CAPTIVITY OF ENDANGERED SPECIES

The practice of breeding endangered species in captivity has not begun in earnest in Nepal. Such activities not only require large financial support, they demand a through knowledge of habit and habitat of species and of course breeding details. In many cases, in-situ preservation of many rare species is not a viable option in the face of increasing anthropogenic disturbances. Such rare species may decline drastically and become extinct in the wild for reasons such as genetic drift and inbreeding, demographic and environmental variation, degrading habitat quality, competition from introduced species, disease, or over-exploitation.

Currently, a number of species such as black buck (*Antelope cervicapra*) are preserved outside the Bardia protected area. Similarly, the gharial (*Gavialis gangeticus)* crocodile is being raised artificially in the Royal Chitwan National Park.

The Central Zoo is indeed an example of ex-situ conservation of genetic materials but this kind of effort is hampered by the lack of human, financial and technical resources.

5. AQUATIC WILDLIFE

Nepal's wetland system is rich in aquatic biodiversity. About 731,000 hectares of land is covered by wetlands of different sizes and characteristics. They are the habitat of over 180 species of fish- and water-dependent birds and other mammals. Gharial Gohi, an endangered species of wetland crocodile, is listed in IUCN's threatened species list, and the Ganges River dolphin (*Platanista gangetica)* is regarded a vulnerable species in the wetlands. Amongst the bird population, 90 species are migrants, 66 species are residential, and the remaining 34 birds are uncommon and rare resident species. Out of

370 species of mammals, birds, reptiles, fish and higher vertebrates which are dependent on wetland habitats, about 100 species are threatened.

6. LEGISLATION

In 1993, Nepal passed the Fourth Amendment to the *National Parks and Wildlife Conservation Act* (hereinafter the Buffer Zone Management Act or BETA) to enable His Majesty's Government (HMG), acting through the Department of National Parks and Wildlife Conservation (DNPWC), to address natural resource problems occurring on lands adjacent to national park boundaries.

The Act gives HMG authority to designate buffer zones on lands adjacent to national parks or reserves. The DNPWC, as the representative of HMG, cannot take ownership of private lands in buffer zone areas, but it can assume responsibility for public lands administered by the Department of Forestry (DOF) or other governmental agencies. The Chief Warden is responsible for managing forest resources in designated buffer zone areas, but the law encourages him to form User Group Committees (UGCs) to promote local involvement in forest management.

The law, however, does not specify the UGC's rights and duties, leaving that to be settled through regulations or otherwise. In addition, the Act provides that 30 to 50 percent of the funds (30/SO funds) generated from park revenues (e.g., entrance fees, hotel royalties, etc.) may be expended for local community development.

In summary, the language and structure of the Act is designed to promote coordination between park authorities and local villages to protect the parks through responsible management of buffer zone forest resources and to ensure sustainable forest resources for local consumption.

CHAPTER XIII

SECTORAL ISSUES, LEGISLATION AND INSTITUTIONS: ECO-TOURISM

Key Issues: Wildlife and Park Management; Loss of Biodiversity; Forests Degradation; Environment Education; Livelihood of Local Peoples;

Key Legislation: Tourism Act 1978, Private Forest (Nationalization) Act, 1956; Forest Act, 1961; Forest Protection (Special Arrangements) Act, 1967; Forest Products (Sales and Distribution) Rule, 1970; Panchyat Forest Rule, 1978; Panchayat Protected Forest Rules, 1978; Leasehold Forest Rules, 1978; Private Forest Rules, 1984; The National conservation Strategy for Nepal 1987; Nepal Environment Policy and Action Plan 1993; Forest Act of 1993; the Royal Chitwan National Park Rule (1974), Himalayan National Parks Rule (1979); Wildlife Reserve Rules,1977; National Park and Wildlife Conservation Act 1973 National Parks and Wildlife Conservation Rules (1974)

Key Institutions: Ministry of Tourism; Department of National Parks and Wildlife Conservation; Ministry of Population and Environment;

1. INTRODUCTION

While tourism provides a novel opportunity for development of often remote and mostly resource-poor mountain communities, it can also create problems and pose new challenges. The fragile mountain ecosystem is already under greater pressure due to the demands of the growing population. Moreover, a majority of the people in the mountain areas of Nepal live in abject poverty. Development has not been able to reach many remote and accessible areas of the mountains and the people there continue to depend on natural and land resources for subsistence. The environment, in terms of renewable natural resources, is degrading; population is growing, and hardships increasing. Neither do opportunities for change appear to be imminent. In these apparently hopeless situations, tourism development in the mountain areas provides some hope for the alleviation of the situation faced by mountain people.

In recent times the negative impacts of tourism on fragile eco-systems, culture and the social setting of the country have begun to surface. Uncontrolled littering in and around the Himalayan region, deforestation to provide fuel for cooking and heating, and destruction of habitats by building unwarranted infrastructure are some of the negative aspects of tourism. Considering all the negative effects of tourism, some of the famous tourist destinations in Nepal such as Annapurna Conservation Area, Royal Chitwan National Park, and other national parks and protected areas have adopted a policy of eco-tourism. The basic concept behind eco-tourism is not only to promote tourism but at the

same time to manage it in environmental-friendly ways. Under this policy, help is provided to establish necessary tourist facilities such as lodges, hotels and camp-sites in a planned and organised manner.

The main piece of legislation dealing with tourist activities is the Tourism Act 1978, which is administered by the Tourism Board. The objective of the statute is to prescribe controls upon the operation of the tourist industry, such as hotels, restaurants and trekking agencies. Several bylaws have been enacted pursuant to the Tourism Act, the most pertinent being the Mountaineering Rules, which require mountaineering expeditions to be responsible for their litter actions with regard to the environment.

2. ENVIRONMENT IN TOURISM MANAGEMENT

Garbage generation is already becoming a serious problem in mountain areas. Garbage may be of three broad types: biodegradable, non-degradable, and toxic. A great deal of the tourists‘ mountain litter is non-biodegradable. Estimates indicate that an average trekking group of 15 people will generate about 15 kg of non-biodegradable, non-burnable garbage in ten trekking days. With about 70,000 trekkers visiting the mountain areas, this problem appears to be serious.

Toxic waste results from batteries and other materials that contain heavy minerals. Even bio-degradable waste generated ruins cleanliness and hence visitor satisfaction. All of these forms of waste can be harmful to human and livestock, directly or indirectly: seepage can result and surface and/or ground water sources can become polluted. A third problem is human waste management, as many people in rural areas do not own toilets, and thus use open spaces.

Sewage

In comparison to mountain tourists, the liquid waste generated by tourist staying in city areas is very large. Some large hotels have soak pits and septic tanks to collect this liquid waste material, but lack of proper management of facilities results in groundwater contamination and, in many cases, it is discharged directly into sewers which results in the pollution of surface water. In case of mountain tourists, sitting toilets that are too close or directly over streams or drinking water sources, and the use of chemical soap for bathing or washing dishes and clothes are reported sources of pollution. Additionally, the lack of monitoring by the authorities contributes to the pollution problem.

Forests

Deforestation is the most severe and best known environmental problem contributed by mountain tourism. It is estimated that daily consumption of firewood is 6.4 kg/day per tourist and is increasing by 10 percent annually. The most common species used are rhododendron and birch. Deforestation is thus is the most severe environmental problem contributed by the mountain tourist. Thus the pressure exerted by tourists on the forest is much higher than that of local people. The decline in forestry resources has been

aggravated by the failure of the government to provide a workable system of forestry management.

3. MANAGEMENT OF TOURIST RESORTS

The main piece of legislation dealing with tourist activities is the *Tourism Act, 1978*. The object of this Act is to prescribe controls upon the operations of the tourist industry, such as hotels, restaurants and trekking agencies. In general, these regulations have been only partially implemented. All tourist resorts are privately owned and it is the responsibility of the management to assure that their operations are environmental friendly.

Code of Conduct of Tourists

No general code of conduct has been drawn up, although the Tourist Board has ordered that along certain ecologically-sensitive trails, only group treks can be undertaken, and only with a registered trekking agency. The trekking agency must ensure that enough kerosene is carried so as to meet all fuel needs. Trekking and mountaineering activities in national parks are also regulated by the Himalayan National Park Rule (1979), which requires visitors to be self sufficient in fuel and dispose of garbage in designated areas.

Several by laws have also been enacted pursuant to the Tourism Act, the most pertinent being the Mountaineering Rules. In addition, mountaineering teams are to refrain from any activities calculated to injure the socio-cultural traditions and customs of the mountain communities with which they come in contact (per Rule 7 (b)). In order to preserve the local culture and mitigate adverse impacts on people and environment, as well as on culture and religion, it is necessary that tourists should follow simple voluntary codes of conduct. These codes of conducts are:

- Camp sites: Keep the campsite clean during and after use
- Limit of Deforestation*:* Make no open fire and discourage others from doing so. Choose accommodation where kerosene or fuel-efficient firewood stoves are used.
- Water and waste: Keep local water clean and avoid using pollutants such as detergents in streams or springs.
- If no toilet facilities are available make sure you are at least 30 m away from water sources and bury or cover waste matter.
- Burn paper and packaging waste in a safe place.
- Plants should be left to flourish in their natural environment.
- Help others to follow conservation measures.
- Respect privacy.
- Respect holy places.
- Refrain from giving money to children since it will encourage begging.
- Respect for local etiquette earns you respect

CHAPTER XIV

STATUTORY TOOLS

Key Issues: Implementation; Public Participation; Education and Awareness

Key Legislation: Environmental Protection Act, 1996 and Rules, 1997; Environment Impact Assessment, The National Parks and Wildlife Conservation Act, 1973; Industrial Enterprises Act, 1992

Key Institutions:

1. INTRODUCTION

In Nepal, it is the duty of environmental units and of the environment ministry to carry out Environmental Impact Assessment (EIA). There are several environmental units in Nepal ranging from committees to councils and the ministry. The Parliamentary Committee on Natural Resources and Environmental Protection (PCNREP), under the chairmanship of a parliamentarian, oversees government action in initiating natural resources conservation and environmental protection measures.

The Environmental Protection Council (EPC) is a high-level body that was created to provide guidance on the formulation of policies, the preparation of working procedures, and the implementation of policies related to various aspects of environmental conservation, including the development of a national system for environmental planning, environmental impact assessment and evaluation, pollution control and the protection of the national heritage.

2. ENVIRONMENTAL IMPACT ASSESSMENT

The main functions of the Ministry of Population and Environment in Nepal include formulating, refining and implementing EIA guidelines. This function involves four specific activities:

(a) Preparing, revising and refining sectoral EIA guidelines;

(b) Encouraging those agencies concerned to conduct EIAs as per approved guidelines before implementing any development project; and

(c) Examining and approving EIA reports of intersectoral and national importance; and

(d) Implementing the provisions of, and obligations arising out of, international agreements, treaties and conventions on the environment, by:

- Acting as the national agency for international treaties on environment;
- Preparing a strategy to implement the provisions of international treaties;
- Taking a lead role in cooperating with other ministries in fulfilling obligations arising from international conventions, treaties, agreements and declarations; and
- Participating in programmes conducted in pursuance of international conventions.

Moreover, in relation to EIA's, under the *Environment Protection Act* (EPA) 1997, proposals for all plans, programmes and projects which are likely to have an impact on the environment, irrespective of their ownership, will need to be submitted to the government agencies concerned for approval through Initial Environmental Examination (IEE) and EIA reports. Despite the requirement for an IEE, if examination shows that a proposal will not have a significant adverse effect on the environment, it can be approved by the concerned agency itself and forwarded to the Ministry of Population and Environment. If examination of the IEE indicates that an EIA should also be carried out for that particular proposal, the agency can direct the party concerned to take the required action. After receiving the proposal together with an EIA report, the agency concerned is required to forward the report and its evaluation to the Ministry of Population and Environment. If it is considered necessary, the ministry can set up a committee of experts from the agencies concerned to review the project, and formulate comments and reactions on the EIA report. If the committee finds that the proposal will have no significant adverse impact on the environment, the Ministry of Population and Environment will then approve the proposal.

Nepal's Eighth Five-Year Plan (1992-1997) recommended Formulation guidelines, which prioritise the obligatory assessment of environmental impacts in feasibility studies by various sectoral agencies. On the basis of such studies, adequate funds will be allocated within the project budget for minimising any adverse effects to the environment. The *National Environmental Impact Assessment Guidelines 1993* state that a draft EIA report must be released for public review and comment. The review of the draft report and comments should be made available for review by the project proponent, NGOs and concerned public. The Nepal has harmonised their EIA legislation into National EIA Guidelines, clearly defining the agencies responsible for reviewing the Environmental Impact Statement (EIS) which consists of the National Planning Commission, Environment Division and line ministries associated with the project. The Guidelines also detail the parameters for evaluation of the project and its impact on the environment.

The *Environmental Protection Act and Rules, 1997* oblige the proponents to prepare an IEE and/or EIA report in relation to any prescribed plan, program or project which may make changes in existing environmental conditions by physical activity, developmental activity or changes in land use. Under present legislation it is the line ministry of the

proponent who should submit the EIA report to Ministry of Population and Environments and jurisdiction lies with it for approval.

Existing laws relating to urban planning and development are in place, but the legislation does not recognise the contribution which EIA's can make in the area of development control and environmentally-sound development. Nevertheless, the most recent *Water Resources Act and Electricity Act* requires the preparation of an EIA report. These two Acts are the main legislation that has implemented the system the EIA in Nepal.

Policies to address environmental damage resulting from large-scale projects included developing EIA and mitigation measures in the feasibility studies. Large-scale projects would be required to establish a conservation section within the project to manage the social and environmental programs and a fund would be created to help finance these programmes.

2. STANDARDS

There are no mandatory environmental quality standards in Nepal. A few sector-specific discharge standards have been developed by the *Nepal Bureau of Standards and Metrology* but these standards are only voluntary. They are specific to the leather, food, textile and carpet, fermentation, distillery, and sugar industries. Under the *Water Resources Act*, the Ministry of Works and Housing has developed *Drinking Water Standards,* including 29 parameters including tolerance limits, but these standards have not been implemented yet.

Unless there are ambient air and water quality standards developed and enforced, it is difficult to enforce existing pollution prevention- and control-related legal provisions scattered in various pieces of legislation

With the support of the *ADB TA No. 2847-NEP Project***,** formed by the Ministry of Population and Environment, Ambient Standards for air and water have been proposed.

3. LICENSING/PERMITTING

Licencing and permitting for industrial establishments is governed by the *Industrial Enterprises Act, 1992.* The Act has classified industries on the basis of investment and type. In the mining sector, the licence to operate a mine is governed by the Department of Mines and Geology. In other sectors, such as forestry, agriculture, water resources etc., it is the responsibility of the proponent to obtain license or permit from the prescribed authority or Departments of the respective line Ministries, and observe the prescribed conditions.

4. MARKET BASED INSTRUMENTS, INCENTIVE AND DISINCENTIVES

Recently, the government has introduced some economic incentives to promote environmental consideration in activities. For example, the recent policy to involve the private sector on the import of agri-inputs, and decrease in the amount of subsidy has provided a basis for more efficient use of agricultural inputs. Similarly, government protection of tea and coffee is designed to bring about a positive impact on soil conservation.

Methane gas production has taken a very encouraging place in alternate energy utilisation in the Terai region. Subsidies for methane production in rural areas are likely to have positive impacts on forest based environment, as the majority of people depend on firewood to meet their energy needs. Additionally, it may improve indoor air pollution. The government has implemented a policy to provide interest free loans with a repayment period of seven years and a direct subsidy of Rs. 5,000 per methane production plant. This incentive should help save approximately 4.8 to 6.5 tons firewood per household, per year. A similar policy of subsidy on kerosene could also contribute to reduce pressures on forestry.

The *Industrial Enterprises Act, 1992* has included incentives to enterprises who want to use environmentally-friendly equipment or processes. According to section 15 (k),

> ‗Permission shall be given for a reduction of up to 50 percent from the taxable income for the investment of any process or equipment, which has the objective of controlling pollution or which may have a minimum effect on the environment. Such remission may be deducted on the lumpsum or on an instalment basis within a period of three years.‘

Another incentive to industry under this Act reads: ‗After an industry comes into operation, 10 per cent of the gross profit shall be allowed as a deduction against taxable income on the account of expenses related with technology, product development and efficiency improvement.‘

The *Environmental Protection Act, 1996* has a provision to provide funds to agencies working towards environmental conservation activities. The *National Parks and Wildlife Conservation Act, 1973* (as amended, 1993) provides a special provision to allocate 30 to 50 percent of the total revenue generated in the protected areas for community development. This provision is a positive motivational factor towards the conservation of forest and forest based products.

Recently, after banning the diesel operated three wheeler from Kathmandu Valley, MOPE is providing soft loans for Electrical Three Wheeler and 95 percent of petrol-operated small commuter vans.

Most or even all of the existing laws and regulations are heavily orientated towards ‗command and control‘ measures with provisions for various penalties and punishments. In view of the present liberal, market-oriented policy of the Government, it would also be

advisable to introduce economic instruments and market mechanisms for compliance with environmental measures. Taking into consideration the economic growth and environmental situation of the country, it would be worthwhile exploring some possible policy options and incentive measures.

The existing policy of providing heavy subsidies for chemical fertilizers and some petroleum products needs a critical review. The application of subsidies has resulted in limited consumption of fertilizers in some places and for some crops because of inadequate and untimely supply, while encouraging liberal usage in other places and for other crops. Available evidence also indicates that, for farmers, an adequate and timely supply is more important than price. Likewise, underpricing of water and electricity also encourages their unnecessary use and perpetuates the problem of inadequate supply as a result of resource constraint. These policies are all unsustainable and therefore need correcting at some stage through a gradual phasing out of subsidies and the introduction of price adjustments for public utilities, at least on a cost-recovery basis.

This should be done in parallel with the introduction of additional taxes and tariffs on polluting materials such as high lead content petroleum products, high sulphur content coal, as well as a carbon tax on the import or sale of vehicles. However, Government subsidies, if properly directed, can be both growth-promoting and environmentally-friendly. For example, the present capital and loan interest subsidy for bio-gas plants has the positive effects of reducing firewood consumption and pollution and, at the same time, of enhancing the adoption of an alternative source of energy, especially in rural areas. A similar subsidy for the installation of micro-hydropower plants, solid waste recycling plants and solar energy plants deserves consideration.

As a part of financial reform measures, some of the environmentally-friendly industrial enterprises and other development activities in the private sector could also be treated as ‚priority areas' and included in the present central bank definition of such areas, so that the financial institutions can be encouraged to direct part of their lending to such activities. It is also worthwhile making it mandatory, on the part of financial institutions, to look into the environmental aspects when scrutinizing a project proposal for a loan in order to determine whether the environmental costs are external or internalised. Such an analysis should be particularly relevant in the case of industries which use non-renewable natural resources as raw materials. Also, the interest rate structure could be made discriminatory as a way of penalizing environmentally-unfriendly projects.

As a part of trade sector reforms, it is desirable for a negative list of highly polluting items to be prepared; the import of such items could then be banned, restricted or subjected to import licensing under stringent conditions, to ensure that they are used only for the specified purposes. Likewise, some imported polluting items could be subjected to a pollution tax in addition to the regular customs tariff, or to a depository refunding system under which the deposited money can be refunded only after the submission of a certificate of proper disposal of waste residues.

As a part of fiscal reform, recycling industries in general could be provided with some tax incentives and recycled products could be exempted from sales tax or the value-added tax expected to come into force from fiscal year 1997/98. Similarly, differential tax rates could be introduced to discourage the establishment of industries using non-renewable resources as raw materials, while encouraging those industries, which produce environmentally friendly substitutes for polluting imports.

CHAPTER XV

MULTILATERAL ENVIRONMENT AGREEMENTS AND THEIR IMPLEMENTATION

Key Issues: Implementation; Technology Transfer; Inbuilt Funding Mechanism; Synergy with other agreements; Informed Negotiations, Education and Awareness; Enforcement and Compliance;

Domestic Legislative Measures: Environmental Protection Act, 1997; Environment Protection Regulations (EPR 2054, 1997) and its 1st Amendment 1998); ODS Consumption (Control) Rules, 2001; Conservation Area Management Regulations, (1996); Forest Act, and First Amendment Act, (1998); Forest Protection (Special Arrangements) Act, (1967); Forest Regulations, (1994); Himalayan National Parks Regulations, (1979); Khaptad National Park Regulations, (1985); King Mahendra Trust for Nature Conservation Act, (1982); National Parks and Wildlife Conservation Act, (1973); National Parks and Wildlife Conservation Regulations, (1974); Plant Protection Act, (1972); Royal Chitwan National Park Regulation, (1974); The Wildlife Conservation Act, (1958); Wildlife Reserves Regulations, (1977);

Key Institutions: Ministry of Population and Environment; Ministry of Science and Technology; Promotion of science and technology; Ministry of Culture, Tourism & Civil Aviation; Ministry of Water Resource; Ministry of Forest and Soil Conservation; Ministry of Health Public health services and family planning, hospitals; Ministry of Home Disaster Relief and Rehabilitation

1. INTRODUCTION

The international community is playing an important role in the conservation of the environment through various measures. Cross-sectoral environmental issues are frequently addressed and national actions promoted through the adoption and implementation of environment-related resolutions enshrined in international conventions. Nepal has also joined these international efforts by either being Party to several Conventions or by participating in the legally non-binding instruments such as Agenda 21.

In June 1972, Nepal participated in the *United Nations Conference on Human Environment*, held in Sweden. The Conference prompted Nepal to initiate several environmentally-friendly activities and rehabilitate its degraded lands. It has continued to participate in several meetings and conferences. Nepal actively participated in the Earth Summit in June 1992, which adopted Agenda 21 as a blue print of actions on environment and development for the 21st century. Nepal has also re-emphasised its plan to attain the goals of sustainable development, embodied in "Our Common Future."

Nepal has also been actively participating in regional environment management efforts. It is a member of various regional inter-governmental bodies such as the South Asian Co-operative Environmental Programme (SACEP) and the South Asian Association for Regional Co-operation (SAARC), both of which aim at fostering relationships and working for the management of the environment, individually or jointly.

2. LEGALLY BINDING INSTRUMENTS

The past two decades have witnessed the birth of a considerable number of international Conventions and Agreements in the field of environment conservation. Several international environmental instruments were adopted to address a wide variety of environmental problems such as trans-boundary air pollution, protection of the ozone layer, trans-boundary movements of hazardous wastes, trade in endangered species, protection of international waterways, climate change, conservation of biological species and combating desertification. In accordance with the commitments in the international forums, Nepal has ratified or has acceded to 16 environment-related Conventions and Agreements.

However, despite HMG being bound under the *Nepal Treaty Act* to take legislative measures for the implementation of treaties to which Nepal is party, a significant gap between international environmental instruments and their implementation at the national level is apparent. This may be due to the absence of a specific agency to implement these treaties.

As a Party to these Conventions, Nepal has to prepare and implement national action programmes to bring about change in consumption patterns, ensure the conservation of biological species and/or forests, and implement land improvement activities. Some environmental obligations of the Conventions and Agreements, to which Nepal is a Party, are presented in the table below.

3. OBLIGATIONS OF SELECTED CONVENTIONS

Name of the Conventions	Entry into Force in Nepal	Major Obligations
UN Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994	13-Jan-97	Combating desertification and mitigating the effects of drought by adopting an integrated approach to address the physical, biological, and socio-economic aspects of the processes of desertification and drought; and
		Integration of strategies for poverty eradication, and preparation and implementation of the National Action Programmes
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, 1989	13-Jan-97	Protection of the environment and adoption of measures to safely transport, dispose and manage hazardous wastes;
		Controlling illegal traffic of hazardous wastes
Vienna Convention for the Protection of the Ozone Layer, 1985	4-Oct-94	Adoption of appropriate measures for the protection of human health and the environment resulting from modifications in the ozone layer;
		Adoption of measures, procedures and standards to minimise the use of ozone depleting substances; and
		Initiation and co-operation to carry out research and scientific assessment on processes that may affect the ozone layer
United Nations Framework Convention on Climate Change, 1992	31-Jul-94	Stabilisation of green house gases concentrations in the atmosphere and protection of the climate system;
		Precautionary measures to anticipate, prevent or minimise the causes of climate change;
		Formulation of national policies and corresponding measures; and
		Promotion, co-operation and facilitation in research and public awareness on climate change and its effect
Convention on Biological Diversity, 1992	21-Feb-94	Conservation and sustainable use of biological diversity, and equitable sharing of benefits;
		Preparation and implementation of national strategies, plans or programmes for the conservation and sustainable use of biodiversity; and
		Conservation in in-situ and ex-situ conditions, and promotion on biotechnology and genetic research

Agreement on the Network of Aquaculture Centers in Asia and the Pacific, 1988	4-Jan-90	Expansion of aquaculture development through multi-disciplinary research on selected aqua-farming system and transfer of technologies; and
		Establishment of a regional information system, and train and upgrade core personnel for national aquaculture planning, research, training, extension and development
Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1971	17-Apr-88	Designation of wetlands of national and international importance and conservation, management and wise use of migratory stock of waterfowl and their habitats
Convention for the Protection of the World Cultural and Natural Heritage, 1972	20-Sep-78	Adoption of effective measures for the protection of cultural and natural heritage through national and international co-operation
Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973	16-Sep-75	Protection of natural ecosystem including wild fauna and flora; and
		Regulation on trade, import and export of species listed in Appendices
Plant Protection Agreement for the South East Asia and Pacific (as amended), 1956	12 August, 1965	Prevention on the spread and introduction of pests of plants and plant products, and promotion of measures for their control during import and export

Nepal is also party to the Convention on the High Seas; Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water; Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space including the Moon and Other Celestial Bodies; Treaty on the Prohibition of the Emplacement of Nuclear Weapons and Other Weapons of Mass Destruction on the Sea-bed and the Ocean Floor and in the Subsoil Thereof; United Nations Conventions on the Law of the Sea; and the International Tropical Timber Agreement.

The last three decades have seen efforts for species conservation in the protected areas have brought about a change in the population of a few of the endangered wild animals. CITES played a major role in contributing towards adoption of stringent measures for the conservation of the rhinoceros.

4. LEGALLY NON-BINDING INSTRUMENTS

A number of international conferences and meetings have adopted environment-related principles and recommendations to improve environmental quality. Though not legally binding, it is the moral responsibility of the country to implement them through integration into the national programmes.

In this context, the principles adopted in the Stockholm Conference and Rio Earth Summit are of major importance. Agenda 21 of the Earth Summit and the authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests enable and facilitate a country to prepare and implement environmentally friendly activities. In accordance with the spirit of these principles, Nepal has developed and implemented numerous environmental policies and programmes. HMG's National Environmental Policy and Action Plan (NEPAP), 1993 has embodied some of the concerns which were prepared after the Rio Earth Summit.

Nepal has accorded high priority to implementing these Conventions as well as legally non-binding instruments. However, it has yet to develop and implement all the Convention resolutions through the development of strategies and regulatory measures.

5. DOMESTIC LEGISLATIVE MEASURES

There are a number of steps that needed to be taken at the national level for a treaty to become binding on the signatory. Legal measures for the ratification and implementation of treaties in Nepal can be divided into two main categories: Procedures relating to constitutional provisions, and statutory implementation measures.

Constitutional Provisions

Under the *Constitution of the Kingdom of Nepal, 1990* there are three general types of treaty that require various procedures for ratification or acceptance:

d) A treaty that requires the ratification of, accession to, acceptance of, or approval by a majority of two thirds of the members present at a joint sitting of both Houses of Parliament.
Pursuant to Article 126(2) of the Constitution, such treaties are categorised as follows:
i) peace and friendship,
ii) defence and strategic alliance,
iii) boundaries of the kingdom of Nepal, and
iv) natural resources, and the distribution of their use, which is not ordinary in nature and which may affect the nation extensively, seriously or in the long-term.

e) A treaty or agreement that requires the ratification, accession to, acceptance or approval of a simple majority of members present in the House of Representative. This procedure applies to treaties that fall under sub-clauses (a) and (d) of Article 125(2), in which the treaty or agreement is of an ordinary nature that does not affect the nation extensively, seriously or in the long term (Article 126(2)).

f) A treaty that does not require an act of ratification for its commencement. This may occur only if a treaty or agreement does not fall into the four categories of treaties or agreements under Article 126(2) of the Constitution.

Article 126(4) provides that a treaty or agreement that is detrimental to the territorial integrity of the Kingdom of Nepal shall not be concluded. According to this constitutional regime, treaties concerning environmental matters would presumably be subject to one of the procedures. Under Article 126(2)(d) of the Constitution, the treaty category _natural resources and distribution of their uses' would conceivably apply to a large number of treaties relating to international environmental matters. Acceptance of such treaty would require a majority of two-third of the members present in both Houses of Parliament. Alternatively, if a treaty is deemed to be _… of an ordinary nature that does not affect the nation extensively, seriously or in the long term,' it is subject to ratification or approval by a simple majority of members present in the House of Representatives (Article 126(2)).

It is difficult to establish how these provisions are applied since there are few examples of their application under the relatively new constitution. However, the *Convention on Climate Change* and the *Convention on Biological Diversity* were passed by a simple majority, and were presumably viewed to be of an _ordinary nature' according to the Constitution. In practice, it appears that when there is little opposition to a treaty, it is passed by simple majority, and this process does not necessarily reflect on the relative importance of the treaty.

Statutory Measures

National legal systems have various ways of internalising a treaty. Some legal systems regard treaties as automatically part of the domestic law by virtue of ratification; others require separate implementing legislation. Section 9(1) of the *Nepal Treaty Act (NTA),* 1991 concerns all matters in a treaty to which Nepal is a party by having ratified, acceded to, approved or accepted the treaty in Parliament. Section 9(1) of the NTA specifies that when a matter in a treaty is inconsistent with the existing domestic laws, these laws shall be void to the extent of the inconsistency, and the provision of the treaty shall prevail as the law of Nepal.

HMG is required to submit a proposal to Parliament pursuant to Section 5 of the NTA if it wants to ratify, accede to, accept or approve treaties related to subjects mentioned in Article 126(2) of the Constitution, or if the government wants permission for accession of such treaties. Section 4 of the NTA provides for the ratification or accession procedures for treaties. Pursuant to Section 4(i) and apart from the treaties mentioned under Article 126(2) of the Constitution, treaties that require ratification, accession to, acceptance or approval, must be submitted to the House of Representatives by the government for ratification, accession, approval or acceptance.

Section 4 (iv) provides that the kingdom of Nepal or HMG cannot become a party to treaties that establish an intergovernmental organisation or party to a treaty which is inconsistent (adverse) to the prevailing law of Nepal unless a proposal providing for its ratification, accession, acceptance or approval is passed by the House of Representatives.

Section 6 of NTA stipulates that if a treaty is signed by HMG, the kingdom of Nepal or HMG is *deemed* to be a party to that treaty, then that treaty has been accepted, provided the treaty is not included in Section 4 of NTA or in Article 126(2) of the Constitution. However, Section 4 of the NTA and Article 126(2) of the Constitution together include most treaties, and make it unlikely that a treaty could be ratified, acceded to or accepted without having the majority approval of the House of Representatives. Furthermore, under Section 9 of the NTA, HMG is obliged to inform the House of Representatives of the treaties HMG has approved and executed within 30 days of its sessions. The government is also required to publish in the Nepal Gazette the treaties that are ratified, acceded to, approved or accepted by Parliament, within 60 days of ratification, accession, acceptance or approval and a certified copy of any other treaty to which Kingdom of Nepal or HMG is a party which HMG deems appropriate to be published.

6. LIST OF INTERNATIONAL ENVIRONMENTAL INSTRUMENTS RATIFIED OR ACCEDED TO BY NEPAL

1. Plant Protection Agreement for the South-East Asia and Pacific Region, Rome, 1956. Nepal acceded to the Agreement on 12 August 1965.
2. Convention on the High Seas, Geneva, 1958. Nepal ratified the Convention on 28 December 1962.
3. Treaty Banning Nuclear Weapon Tests in the Atmosphere, Outer Space and Under Water, Moscow, 1963. Nepal ratified the Convention on 7 October 1964.
4. Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space Including the Moon and Other Celestial Bodies, Washington, 1967. Nepal ratified the Convention on 10 October 1967.
5. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971. Nepal acceded to the Convention on 17 December 1987.
6. Treaty on the Prohibition of the Emplacement of Nuclear Weapons and other Weapons of Mass Destruction on the Sea Bed and Ocean Floor and the Subsoil Thereof, London, Moscow, Washington, 1971. Nepal ratified the Convention on 6 July 1971.
7. Convention Concerning the Protection of the World Cultural and Natural Heritage, 1972. Nepal accepted the Convention on 20 June 1978.
8. Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, 1972. Nepal ratified the Convention on 1 January 1973.
9. Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973. Nepal acceded to the Convention on 18 June 1975.

10. Vienna Convention on the Protection of the Ozone Layer, 1985. Nepal ratified the Convention in 1994.
11. Montreal Protocol on Substances that Deplete the Ozone Layer, 1987. Nepal acceded to the Protocol in 1994.
12. London Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, 1990. Nepal acceded to the Convention in 1994.
13. Agreement on the Network of Aquaculture Centres in Asia and the Pacific, 1988. Date of Ratification/Accession (AC): 4 April 1990 (AC).
14. United Nations Framework Convention on Climate Change, 1992. Nepal ratified the Convention on 2 May 1994.
15. Convention on Biological Diversity, 1992. Nepal ratified the Convention on 23 November 1993.
16. Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989. Nepal acceded to the Convention in August 1996.
17. Convention on Combating Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa, 1994. Nepal ratified the Convention in 1996.

Case Study Of Implementation Of Four Conservation Conventions

Nepal has become a signatory to a number of treaties relating to the protection of biodiversity, habitat and national heritage. The four main treaties examined below are as follows:

- Convention on Wetlands of International Importance Especially as Waterfowl Habitat (hereafter Ramsar Convention)
- UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (hereafter World Heritage Convention)
- Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) and
- Convention on Biological Diversity

8. RAMSAR CONVENTION ON WETLANDS

The Ramsar Convention provides a framework for international cooperation in the conservation of wetland habitats. It entered into force in 1975 with the accession of the seventh party, and by the end of 1992, it had 71 contracting parties.

National Implementation Measures

Nepal acceded to the Ramsar Convention on 17 April 1988. Unfortunately, His Majesty's Government has not yet recognized that the current legislation in Nepal precludes optimal fulfilment of the Convention's obligations. There is limited legislation which provides only a modicum of wetlands conservation, despite glaring deficiencies.

Policy Measures

The *Nepal Environmental Policy and Action Plan* (NEPAP) indicates that wetlands in Nepal have often been overlooked as important habitats. It recommends actions such as the identification and protection of marshes, wetland and water bodies significant to biodiversity conservation.

Legislative Measures

Aquatic Animals Protection Act 1961
The Aquatic Animals Protection Act 1961 (AAPA) is one of Nepal's oldest pieces of legislation. It indicates an early recognition of the value of wetlands and aquatic animals.

Soil and Watershed Conservation Act, 1982
The mismanagement of watersheds leads to the degradation of valuable land by flooding, water-logging, salinity in irrigated areas and acceleration of siltation in storage reservoirs. To combat these issues in Nepal, the Government promulgated the Soil and Watershed Conservation Act 1982 (SWCA).

Water Resources Act, 1992
The Act strives to minimise environmental damage to wetlands, especially lakes and rivers, through environmental impact assessment studies.

Electricity Act 1992
Section 24 of the Electricity Act 1992 forbids negative impact on the environment, such as through soil erosion, flooding, landslides, or air pollution, while generating, transmitting or distributing electricity.

National Parts and Wildlife Conservation Act 1973
In relation to the conservation of natural heritage, the National Parks and Wildlife Conservation Act 1972 (NPWCA) provides a relatively strict approach to the conservation of natural areas and wild species. Under this Act, there are six categories of protected areas among which national parks, wildlife reserves and conservation zones are given the highest of protection. Two national parks, Royal Chitwan National Park and Sagarmatha National Park, are world heritage sites and are given the status of national parks under the Act.

9. THE WORLD HERITAGE CONVENTION

The World Heritage Convention entered into force on 17 December 1973. The Convention defines cultural and natural heritage in broad items. Cultural heritage is divided into three categories: monuments, groups of building and sites (Article 1). Natural heritage includes natural features consisting of physical and biological formations or groups of formations, geological and physiographical formations, precisely delineated areas that constitute the habitat of threatened animal and plan species, and natural sites or precisely delineated natural areas (Article 2).

National Implementation Measures

Nepal's fulfilment of the requirements for protecting cultural heritage sites listed on the World Heritage List can be said to be unsatisfactory to date. With respect to the conservation of natural world heritage properties, Nepal has been successfully fulfilling its obligations primarily through the implementation of the National Parks and Wildlife Conservation Act 1973.

Legislative Measures

Ancient Monuments Protection Act 1956
The Ancient Monuments Protection Act 1956 (AMPA) contains various regulatory powers to ensure the preservation of listed cultural heritage sites.

Kathmandu Valley Development Authority Act, 1988
Kathmandu Valley Development Authority Act, 1988 (KVDAA) was enacted to reverse the disorderly development occurring throughout the strained Kathmandu Valley, where seven out of the nine World Heritage Sites are now located.

10. CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES OF WILD FAUNA AND FLORA

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) entered into force on 1 July 1975, and Nepal became a contracting party to the Convention on 18 June 1975. CITES principally provides for the international coordination of trade controls on wild fauna and flora with an unfavourable conservation status through the acceptance of obligations under international law.

Legislative Measures

National Parks and Wildlife Conservation Act 1973
The NPWCA provides a regulatory approach to conserving endangered species and their habitats, which indirectly curbs trade in specimens of such species.

11. CONVENTION ON BIOLOGICAL DIVERSITY

The Convention on Biological Diversity entered into force in December 1993, and the Nepalese Parliament ratified it in September 1993. Its intention is the preservation of flora and fauna for the benefit of both humanity and the flora and fauna itself.

Legislative Measures

Aquatic Animals Protection Act 1961
The Aquatic Animals Protection Act 1961 (AAPA) provides for some legislative protection of the habitats of aquatic species.

National Parks and Wildlife Conservation Act 1973
The conservation of ecologically valuable areas and indigenous wildlife is provided for by the NPWC Act. Nepal has 14 national parks, protected areas and wildlife reserves. Section 3 of the NPWC Act prohibits, *inter alia,* the following in national parks, protected areas and wildlife areas:

- hunting of any animals or birds,
- building any house, hut or other structure,
- clearing or cultivating any part of the land or harvesting any crops,
- pasturing or watering any domesticated animals or birds,
- cutting, burning or damaging any tree, bush or other forest product, and
- mining within national parks or protected areas.

Water Resources Act 1992
The Water Resources Act 1992, for the first time in Nepal, makes an environmental study a mandatory prerequisite for water resource and electricity projects.

Forest Act 1993
The new Forest Act 1993 recognizes the importance of forests in maintaining a healthy environment. The Act requires decision-makers to take account of all forest values, including environmental services and biodiversity, as well as the production of timber and other commodities.

The provisions relating to protected forests, community forests and leasehold forests will have a long-term impact on the conservation and sustainable use of components of biodiversity in the Kingdom.

Constraints on the implementation of Conventions

The most serious constraint on the implementation of environment-related Conventions to which Nepal is committed has obviously been the absence of any coordinating agency such as the Ministry of Population and Environment which is now responsible for the incorporation or integration of various international obligations into the existing laws or preparing new legislation.

Even where there is a specific government agency directly concerned with or obviously responsible for implementation of some Conventions, implementation has not been particularly encouraging. The glaring examples are the Department of National Parks and Wild Life Conservation with the implementation CITES, 1973, and the Department of Archaeology with the Convention Concerning the Protection of the World Culture and Heritage, 1972.

It should, however, be noted that under present trade policy, introduced in 1992, the government has imposed a ban on the export of images of gods and goddesses, palm leaf inscriptions (Tad Patra) and plant leaf inscriptions (Bhojpatra), scrolls (Thanka) of historical importance, wild animals, bile and any other part of animals, musk, snake and lizard skins, raw hides and skin, logs and timber.

The United Nations Educational, Scientific and Cultural Organization/International Council of Monuments and Sites Review Mission of 14-30 November 1993 recommended that several World Heritage Sites in the Kathmandu Valley be placed on the World Heritage in Danger List. When even the implementation status of international environmental instruments to which Nepal became a party more than 15 years ago is so weak, the status of other Conventions such as the Convention on Biological Diversity and Convention on Climatic Change can easily be imagined.

Although Agenda 21 is not legally binding, Nepal is committed to it as are all other nations which attended the United Nations Conference on Environment and Development in June 1992. It deserves immediate implementation by the government, especially those chapters which have a direct relevance to Nepal such as those dealing with integrating environment and development in decision-making, managing fragile ecosystems, sustainable mountain development, promoting sustainable agriculture and rural development, and conservation of biodiversity.

Since two important central coordinating agencies, that is, EPC and the Ministry of Population and Environment, now exist with the necessary mandates, they can be expected to take appropriate and effective steps to see that the international obligations of Nepal are duly honoured and implemented in the interests of both Nepal and the international community. As an initial and immediate step, it is necessary first to take stock of those international obligations emanating from environmentally-related Conventions to which Nepal is already a party, and to examine how those obligations can be implemented effectively.

To facilitate such action, the Ministry of Population and Environment could constitute a ―legal committee" of experts and take the necessary steps on the basis of the findings and recommendations by that committee. The extensive study jointly commissioned by NPC and the World Conservation Union (IUCN), entitled the National Conservation Strategy Implementation Project, is now near completion. The study will serve as an excellent document for both the government and the proposed ―legal committee" in making their review and recommendations, and in taking the necessary actions.

APPENDIX A

LIST OF ABBREVIATIONS

ACRONYM	MEANING
AAPA	*Aquatic Animals Protection Act 1961*
AAPA	*Aquatic Animals Protection Act 1961*
ADB	*Asian Development Bank*
AMPA	*Ancient Monuments Protection Act 1956*
APP	*Agricultural Perspective Plan*
APU	*Anti Poaching Unit*
AUSAID	*Australian Agency for International Development*
BOBP	*Bay of Bengal Program(me)*
CBD	*Convention on Biological Diversity*
CBOs	*Community-Based Organisations*
CF	*Community Forestry*
CITES	*Convention on International Trade in Endangered Species of Wild Fauna and Flora*
CMS	*Conservation of Migratory Species of Wild Animals (the Bonn Convention)*
DMG	*Department of Mines and Geology*
DNPWC	*Department of National Parks and Wildlife Conservation*
DNPWC	*Department of National Parks and Wildlife Conservation*
DNPWCA	*Department of National Parks and Wildlife Conservation*
DOI	*Department of Industry*
EAP	*Environment-related Action Plans*
EEZ	*Exclusive Economic Zone*
EIA	*Environmental Impact Assessment*
EIS	*Environmental Impact Statement*
EPA	*Environmental Protection Act*
ESCAP	*Economic and Social Commission for Asia and the Pacific*
FD	*Forest Department*

FUG	*Forest User Group*
GEF	*Global Environment Fund*
GHG	*Greenhouse Gases*
GIS	*Geographical Information System*
GMO	*Genetically modified Organism*
HMG /N	*His Majesty's Government*
ICJ	*International Court of Justice*
ICTPs	*International Conventions/Treaties/Protocols*
IEE	*Initial Environmental Examination*
ITTO	*International Tropical Timber Organization*
IUCN	*International Union for the Conservation of Nature*
JICA	*Japan International Co-operation Agency*
KMTNC	*King Mahendra Trust for Nature Conservation Act, 1982*
KVDAA	*Kathmandu Valley Development Authority Act, 1988*
LMO	*Living Modified Organism*
MEA	*Multilateral Environment Agreements*
MFCS	*Ministry of Forest and Soil Conservation*
MOPE	*Ministry of Population and Environment*
MPFS	*Master Plan for the Forestry Sector*
NARC	*National Agriculture Research Council*
NCPE	*National Commission for the Protection of the Environment*
NEPAP	*Nepal Environmental Policy and Action Plan*
NORAD	*Norwegian Agency for Development Cooperation*
NPA	*Nepal Petroleum Act 2040 (1983)*
NPC	*National Planning Commission*
NPWCA	*National Parks and Wildlife Conservation Act (1973)*
NTA	*Nepal Treaty Act*
NWSC	*Nepal Water Supply Corporation Act*
PCNREP	*Parliamentary Committee on Natural Resources and Environmental Protection*
PIL	*Public Interest Litigation*
ROAP	*Regional Office for Asia and the Pacific*

SAARC	*South Asian Association for Regional Cooperation*
SAPAP	*South Asian Poverty Alleviation Program(me)*
SWCA	*Soil and Watershed Conservation Act 1982*
TSP	*total suspended particulate*
UGC	*User Group Committees*
UN FCCC	*United Nations Framework Convention on Climate Change*
UNCCD	*United Nations Convention to Combat Desertification*
UNCED	*United Nations Conference on Environment and Development*
UNDP	*United Nations Development Program(me)*
UNEP	*United Nations Environment Program(me)*
UNESCO	*UNESCO*
UNIDO	*United Nations Industrial Development Organization*
URBAIR	*Urban Air Quality Management Strategy*
VDC	*Village Development Committees*
WIPO	*World Intellectual Property Organization*
WWF	*World Wide Fund for Nature*