

**4.1 CONCLUSIONS AND RECOMMENDATIONS**

The degradation of the natural resource base and environment in Bangladesh started with various human and economic development activities, before adequate mitigation measures were considered an integral part of the development process. This happened due to a lack of appropriate sector policies, awareness, and integration of environment and development into conventional development strategies. In the conventional paradigm to attain economic growth the concept of “grow first and clean later” was the underlying principle. In the last decade, particularly after the Rio Summit in 1992, it has been realized worldwide that sustainable development cannot be achieved without environmental conservation. The government of Bangladesh has now realized the need for concern regarding environmental issues, and started incorporating environment into policies dealing with various sectors. However, the major thrust of government policy remains towards poverty alleviation through employment generation and economic growth, and little has been achieved in integrating environmental protection.

The key environmental concerns of the country that have been identified are land degradation, water pollution and scarcity, urban air pollution, loss of biodiversity, and impacts of natural disasters on economy and livelihood systems. There are sectoral policies to address these issues, but a lack of

integration and overlapping of responsibilities prevails among the agencies. There is a lack of coherence among policies, and no holistic approach to mitigate environmental degradation and conserve resources. However, this can be resolved through inter-ministerial decision and coordination. Various policies are now under preparation by the relevant ministries that aim for a sustainable approach towards environmental management and development.

The major gaps that have been identified in mitigating pressures on the natural resource base are mostly related to the lack of institutional capability, lack of proper data and research, particularly on impact assessment, and inadequate action programs for policy implementation. The impacts of climate change on the natural ecosystem, livelihood system, and sustainable development are of future concern. Therefore, it is important to develop a climate change adaptation strategy for the country, particularly to mitigate impacts of extreme climatic events such as droughts, floods, cyclones, and storm surges. This policy also has to be integrated with the existing sectoral policies.

**4.1.1 Policy and Policy Integration**

The following policy and policy-level integration needs to be pursued to promote sustainable development in the country, as well as improve environment and quality of life as an integral part of the process.

Policy and Policy Level Integration	Process and Requirements	Actors and Participants
Land use Policy	<ul style="list-style-type: none"> <li>❖ A consultative process is required for integrating sectoral policies and bringing coherence among the policies</li> <li>❖ Resources are required for integrating sectoral policies and developing a comprehensive land use policy</li> </ul>	<ul style="list-style-type: none"> <li>❖ Ministry of Environment and Forest can take coordination role for integrating sectoral policies, in association with Ministry of Land</li> <li>❖ Ministry of Water Resources, Ministry of Agriculture, Ministry of Industry, and Ministry of Trade and Commerce will be the other major participants in this exercise</li> <li>❖ Non-government research and policy institutes, academicians, and participation of civil service organizations will make it more acceptable to society</li> </ul>
Integrating Environment and Climate Change into Sectoral Policies	<ul style="list-style-type: none"> <li>❖ A consultative process is required for integrating environment and climate change issues into sectoral policies</li> <li>❖ Resources are required for integrating these issues into the sectoral policies</li> </ul>	<ul style="list-style-type: none"> <li>❖ Department of Environment under the Ministry of Environment and Forest can take the lead in integrating environment and climate change issues into sectoral policies. Climate change issue is already incorporated in the National Water Policy, which could be used as an example for other sectoral policies</li> <li>❖ Non-government research and policy institutes, academicians, and participation of civil service organizations will make it more acceptable to society</li> </ul>

### 4.1.2 Institutional Capacity Building

Lack of institutional capability has been identified as a major constraint in implementing policy, and enforcing environmental acts and regulations. In order to enhance performance of the Department of Environment regarding the latter, institutional capacity building in terms of equipment, training, and additional financial support is essential. In addition, promoting a strong network among researchers and policy makers will enable quality research, and sharing of knowledge and experiences towards better implementation of policies.

various impacts of degradation of land and water ecosystems on human health, livelihood systems, and sustainable development of the country.

Policy integration, institutional capacity building, developing options for mitigating environmental degradation, and action programs all require adequate international assistance, both financial and technical.

The State of Environment report is strongly recommending inclusion of environmental issues in various sector policies in Bangladesh, and

Type of Capacity Building	Recipient and Resource Requirement	Outcome
Improvement of Analytical Laboratories, Monitoring Equipment, and Training	<ul style="list-style-type: none"> <li>❖ Department of Environment under Ministry of Environment and Forest</li> <li>❖ Resources are required for improving analytical laboratories and training</li> </ul>	<ul style="list-style-type: none"> <li>❖ Improve analytical capabilities, which will enable DoE to produce good quality data</li> <li>❖ Better Enforcement of Environmental Act and Regulations</li> </ul>
Networking and Dissemination of Information	<ul style="list-style-type: none"> <li>❖ Department of Environment will establish a network of professionals, including researchers from government and private sector</li> <li>❖ Resources are required for maintaining this professional network</li> </ul>	<ul style="list-style-type: none"> <li>❖ Sharing of knowledge and experiences among professional groups</li> <li>❖ Assistance in formulating action research and policy advocacy</li> </ul>
Waste Reception and Treatment Facilities at Ports	<ul style="list-style-type: none"> <li>❖ Ministry of Shipping and Port Authority</li> <li>❖ Resources are required for installing reception and treatment facility</li> </ul>	<ul style="list-style-type: none"> <li>❖ Reduce pollution load in the coastal and marine areas</li> </ul>

### 4.1.3 Action Program and Research

The ultimate success of any policy or decision depends on the extent to which it turns into action programs and research efforts to bridge gaps. It is now well recognized in Bangladesh that the acts, laws, and regulations to diminish environmental degradation are not inadequate, but rather their enforcement through different programs is weak. Action and research programs are required to mitigate environmental degradation and restore the degraded environment. A number of appropriate programs have been identified in the previous chapter. These action programs and research activities should be undertaken immediately, to prevent further deterioration of the environmental resource base, and to assess the

making the different sector policies coherent regarding environment. These aspects are lacking in the existing policy measures and action programs. For example, water resources need to be managed both qualitatively and quantitatively due to their importance to economic development, and the physical and social environments. Frequent floods and droughts pose tremendous threats to rural livelihoods and the national economy. The recognition of inter dependency among sub-sectors and different ministries, with comprehensive, integrated planning can address the interests of all users, as well as reduce the conflicts in the system. This will enable the country to progress towards a sustainable environment and development.

Type of Actions and Programs	Outcome	Actors and Resource Requirement
<b><i>Land Degradation</i></b>		
Promote balanced use of chemical fertilizers and adoption of IPNS	❖ Improvement of soil quality, increased crop production, and prevention of further land degradation	❖ Ministry of Agriculture, along with their different wings (BARC, NARS, DAE, etc.) ❖ <i>Resources are required to carry out promotional activities and awareness raising</i>
Adjustment of cropping patterns on a large scale incorporating legume/green manure crops, and crop diversification	❖ Improvement of organic content of soil, and enabling sustainable agricultural production	❖ Ministry of Agriculture, along with their different wings (BARC, NARS, DAE, etc.) ❖ <i>Resources are required for research and implementation</i>
<b><i>Water Pollution and Scarcity</i></b>		
Clean-up and Rehabilitation of Pollution Hot-spots: Dhaka, Chittagong, and Khulna	❖ Improvement of water quality for different uses, and restoration of habitat for aquatic species	❖ Ministry of Environment and Forest, Ministry of Industry, Ministry of Water Resources, Civil Society, and Media ❖ <i>Resources are required for reducing pollution load and augmentation of dry season water flow</i>
<b><i>Air Pollution</i></b>		
Use of Low Smoke Lube Oil for Two-stroke Engined Vehicles	❖ Reduction by half of pollution load	❖ Department of Environment, in association with Ministry of Energy and Mineral Resources ❖ <i>Resources are necessary for awareness campaigns</i>
Traffic Management	❖ Reduction of pollution load	❖ City Corporation ❖ <i>Resources are essential for Traffic Management</i>
<b><i>Biodiversity</i></b>		
Conservation Program for Ecologically Critical Areas	❖ Conservation of biodiversity	❖ Department of Environment and Forest, in association with UNDP and other relevant institutes ❖ <i>Resources are essential to carry out conservation programs</i>
<b><i>Natural Disaster</i></b>		
Real-time forecasting and preparedness for natural disasters	❖ Reduction in loss of life and property	❖ Disaster Management Bureau, in association with SWMC and EGIS II



## Acronyms and Abbreviations

ADB	Asian Development Bank	CO <sub>2</sub>	Carbon dioxide g
APM	Ambient Particulate Matter	COD	Chemical Oxygen Demand
BADC	Bangladesh Agricultural Development Corporation	CPP	Cyclone Preparedness Program
BAEC	Bangladesh Atomic Energy Commission	CUS	Centre for Urban Studies
BARC	Bangladesh Agricultural Research Council	DAE	Department of Agricultural Extension
BBS	Bangladesh Bureau of Statistics	DANIDA	The Danish International Development Agency
BCAS	Bangladesh Centre for Advanced Studies	DAP	Disaster Action Plan
BCSIR	Bangladesh Council of Scientific and Industrial Research	DB	Decibel
BECA	Bangladesh Environment Conservation Act	DFID	Department for International Development
BELA	Bangladesh Environment Lawyers Association	DHV	Consultant Group; The Netherlands
BFD	Bangladesh Forest Department	dl	Deciliter
BFIDC	Bangladesh Forest Industry Development Corporation	DMB	Disaster Management Bureau
BGS	British Geological Survey	DMC	Disaster Management Committee
BIWTA	Bangladesh Inland Water Transport Authority	DO	Dissolved Oxygen
BMD	Bangladesh Meteorological Department	DoE	Department of Environment
BMDA	Barind Multipurpose Development Authority	DoFL	Department of Fisheries and Livestock
BNBG	Bangladesh National Biodiversity Group	DPHE	Department of Public Health Engineering
BNH	Bangladesh National Herbarium	dS/m	Decisimen per Meter
BOD	Biochemical Oxygen Demand	DTWs	Deep Tube Wells
BRAC	Bangladesh Rural Advancement Committee	EC	Electric Conductivity
BRTA	Bangladesh Road Transport Authority	ECA	Environmental Conservation Acts
BSCIC	Bangladesh Small and Cottage Industries Corporation	ECAM	Ecologically Critical Area Management
BWDB	Bangladesh Water Development Board	ECAs	Ecologically Critical Areas
CARDINA	Coastal Area Resource Development and Management Association	ECNWRC	Executive Committee of National Water Resources Council
CARE	Co-operative Assistance of Relief Everywhere	ECR	Environmental Conservation Regulation
CBD	Conservation of Biological Diversity	EEA	European Environment Agency
CEN	Coalition of Environmental NGOs	EGIS	Environment and GIS Support for Water Sector Planning
CHT	Chittagong Hill Tracts	EIA	Environmental Impact Assessment
CIDA	Canadian International Development Agency	EMP	Environment Management Plan
CITES	Convension on International Trade of Wild Fauna and Flora	ENSO	El-Nino Southern Oscillation
CNG	Compressed Natural Gas	EPC	Environmental Pollution Control Ordinance
		EPWTA	East Pakistan Water and Power Transport Authority
		EU	European Union
		FAO	Food and Agricultural Organization
		FAP	Flood Action Plan
		FCD	Flood Control and Drainage
		FCDI	Flood Control Drainage and Irrigation
		FD	Forest Department
		FFWC	Flood Forecasting and Warning Centre
		FFYP	Five Fifth Year Plan
		FPCO	Flood Plan Coordination Organization

FRI	Forest Research Institute	NMIDP	National Minor Irrigation Development Project
GBM	The Ganges-Brahmaputra-Meghna	NOAA	National Oceanographic and Atmospheric Administration
GEF	Global Environmental Facility	NORAD	Norwegian Agency for Development and Cooperation
GEMS	Global Environmental Monitoring System	NW	North West
GMS	Geostatic Meteorologic Station	NWMP	National Water Management Plan
GNP	Gross National Product	NWP	National Water Plan
GoB	Government of Bangladesh	NWRC	National Water Resources Council
GWT	Ganges Water Treaty	NWRD	National Water Resource Database
HYV	High Yield Variety	OECD	Organization for Economic Co-Operation and Development
IAEA	International Atomic Energy Agency	PKI	Potential Key Issues
ICLARM	International Centre for Living Aquatic Resources Management	PRIF	Pre-investment Feasibility
ICZM	Integrated Coastal Zone Management	PSIR	Pressure, State, Impact and Response
IDNDR	International Decade for Natural Disaster Reduction	REIS	Riverbank Erosion Impact Study
IEE	Initial Environmental Examination	RF	Reserved Forests
IFAD	International Fund for Agricultural Development	SEMP	Sustainable Environment Management Program
IMDMCC	Inter-Ministerial Disaster Management Coordination Committee	SLR	Sea Level Rise
IPM	Integrated Pest Management	SPARSSO	Space Research and Remote Sensing Organization
IPNS	Integrated Plant Nutrient System	SPM	Suspended Particulate Compounds
ITCZ	Inter-Tropical-Conservation-Zone	SRDI	Soil Resources Development Institute
IUCN	International Union for the Conservation of Nature	SRF	Sundarbans Reserved Forest
KOE	Kilogram Oil Equivalent	SS	Suspended Solids
LGED	Local Government Engineering Department	STWs	Shallow Tube Wells
MACH	Management of Aquatic Resources Management through Community Husbandry	SW	South West
MAF	Million-Acre Feet	SWMC	Surface Water Modelling Centre
MARPOL	Marine Pollution Convention	TSP	Triple Super Phosphate
MEMR	Ministry of Energy and Mineral Resources	TSS	Total Suspended Solids
MES	Meghna Estuary Study	UNDP	United Nations Development Program
MoEF	Ministry of Environment and Forest	UNEP	United Nations Environment Program
MoL	Ministry of Land	UNESCO	United Nations Education, Science and Cultural Organization
MP	Murate of Phosphate	USAID	United States Assistance for International Development
NC	North Central	USEPA	United State Environment Projection Agency
NCA	Net Cultivable Area	USF	Unclassed State Forest
NCS	National Conservation Strategies	VG	Volunteer Groups
NE	North East	VOC	Volatile Organic Compounds
NEMAP	National Environment Management Action Plan	WARPO	Water Resource Planning Organization
NGOs	Non Government Organizations	WASA	Water Supply Authority
NIPSOM	National Institute of Preventive and Social Medicine	WB	The World Bank
NLUP	National Land Use Policy	WHO	World Health Organization
		WQS	Water Quality Standard
		ZDPS	Zonal Disaster Preparedness Specialists

## COMPONENTS OF THE REPORT

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The Bangladesh State of Environment report has been prepared based on the format provided by UNEP, and is composed of four parts. The components of the report are as follows

*Chapter One:* Executive Summary which depicts the status of the key environmental issues of the country (7 pages)

*Chapter Two:* Overview of Major Environmental Development and Trends which provides broad description about natural and ecological resource base of the country, and major environmental concerns in the development context (15 pages)

*Chapter Three:* Key Issues, which describes pressures, state, impacts and responses regarding land degradation, water pollution and scarcity, air pollution, biodiversity and natural disasters according to a Pressure-State-Impact-Response (P-S-I-R) analytical framework. It also attempts to identify gaps, and future options towards attaining sustainable development by enhancing the environmental resource base (92 pages)

*Chapter Four:* Conclusion and recommendations provides possible immediate actions in the arenas of policy, research, and action to combat with the situation towards sustainable environmental management and development (3 pages)

*Appendices:* In addition to the above mentioned chapters, there are five appendixes are in this report. Appendix-1 provides acronyms and abbreviations, appendix-2 provides components of the report, appendix-3 provides list of participants attended in the national training workshop, appendix-4 provides list of participants attended in the first national consultation on draft state of environment report, and appendix-5 provides list of contributors.

