National Environment Policy of Bangladesh: A Critical Review

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Chapter One: Introduction

Bangladesh is a developing country where majority most of the people are dependent on agriculture or other natural resources for their livelihood (Dr. Nishat, A. 2007). At the same time, productivity of nature is necessary to meet the food demand of a huge population. On the other hand, Bangladesh is one of the most climate change impacted countries (CPD, 2001). Geographical position of Bangladesh makes it more vulnerable to natural disaster. Increasing frequency of various natural disasters (CPD, 2001) and the continuation of environment pollution warrant the necessity to evaluate the present Environment Policy of Bangladesh. Therefore, in this research work it will be examined whether the Environment Policy of Bangladesh reflects the current needs of the country with appropriate instruments for environmental management.

1.2 Relevance of the research

Nowadays Economic development and environmental protection are treated as very important issues which needs be addressed to make this human civilization sustainable. Being a developing country, Bangladesh has the intention to make tremendous economic progress by industrialization. But industrialization has negative impact on environment. On the other hand, it is necessary for Bangladesh to put emphasis on agriculture sector to face the challenges food demand of huge population. Healthy and friendly environment is necessary for sustainable agricultural development. Therefore it is a challenge for Bangladesh to design and implement an environmental, policy which can address both economic progress and environment protection (Khalequzzaman, M. 1999).

Number and frequency of cyclone in Bangladesh is increasing at alarming rate. Million livestock and several hundred human lives were lost as a result of cyclone in Bangladesh in 1970, 1985, 1988 and 1999 (Kashem, M. A.; Rahman, M. Z. and Mikuni, H. 1997). Frequent incidence of disaster added new dimension to the necessity of having effective environment policy to protect environment. It is said that Environment protection through an effective environment policy can guide better management of natural disaster (Huq, N. 2008).

Bangladesh is facing severe environmental degradation in various areas. Though the population growth of Bangladesh has been reduced significantly but still Bangladesh is very populous country. Increase of population increases the demand for consumption and which ultimately exploits and degrades natural resources (Huq, S.; Rahman, A. A. and Mallick, D. 1998). Severe land pollution, water pollution, air pollution, degradation in natural resources, bio-diversity, and forest land occurred in Bangladesh. (Huq, S.; Rahman, A. A. and Mallick, D. 1998). Some may argue that as poor country Bangladesh does not has enough capacity to address environmental challenges. But Salnykov, M. and Zelenyu, V. (1999) believes that both rich and poor country can be environment efficient.

Population density in urban area of Bangladesh is highest in the world. Concentration of huge population and their economic activity pollute the urban environment of Bangladesh. On the other hand agrochemical fertilisers are polluting the rural environment. Pollution is more acute in the urban area of Bangladesh than it is in the rural area.

Water Pollution is mostly concentrated in urban growth centers and industrial belts. Major causes of pollution that aggravate water quality are industrial effluents, agrochemical, fecal pollution, spillage and low water flow in dry season. Water pollution problem is compounded by the low flow situation in dry season. Over the past 2 decades, the lowest water data level showed a declining tendency in the dry season (UNEP, 2001).

Table 1. Top five polluters that causes water pollution (Islam, *et. al.*, 2001)

Rank	Industrial sector	Emission (tons/Year)	% Contribution
1	Pulp and Paper	91768.10	47.4%
2	Pharmaceuticals	30866.72	15.9%
3	Metal	27174.61	14.0%
4	Food Industry	23403.39	12.1%
5	Fertilizer/Pesticides	12715.00	6.6%

Estimates for solid waste generated in Dhaka city vary from 3,000 to 3,500 tons per day (ADB 2004). They come from households, commercial and industrial establishments and street sweepings. The indiscriminate disposal of solid waste in public places causes serious environmental hazards and health risks. Uncontrolled and open dumping also clog the urban drainage system, cause frequent drainage congestion and threaten the contamination of water supply.

There are about 250 healthcare centers in Dhaka city that includes hospitals, clinics, nursing homes, dental hospitals etc (ADB 2004). But inadequate waste management systems in these healthcare facilities are posing a serious threat to public health as well as to the environment.

The top toxic chemicals polluters in Bangladesh are the tanneries and leather industry, followed by pulp and paper, pharmaceuticals, fertilizer/pesticides and industrial chemicals. In most cases, the chemicals are disposed on land as part of the solid waste, parts of which are then collected and recycled.

Air pollution is more acute in urban areas than in rural areas. In urban area, the main sources of air pollution are emission of harmful gaseous matters from vehicle, industrial sectors, and construction and open dumping of garbage. In rural area, main sources are brick kilns and wood and biomass consumption (ADB 2004). Due to rapid urbanization the total number of vehicles has increased rapidly. The automobiles on the road are often very old, overloaded and poorly maintained and emit smoke far exceeding the prescribed limit. Industrial development is another major source of air pollution. Most of the industries in Bangladesh are situated in major urban areas.

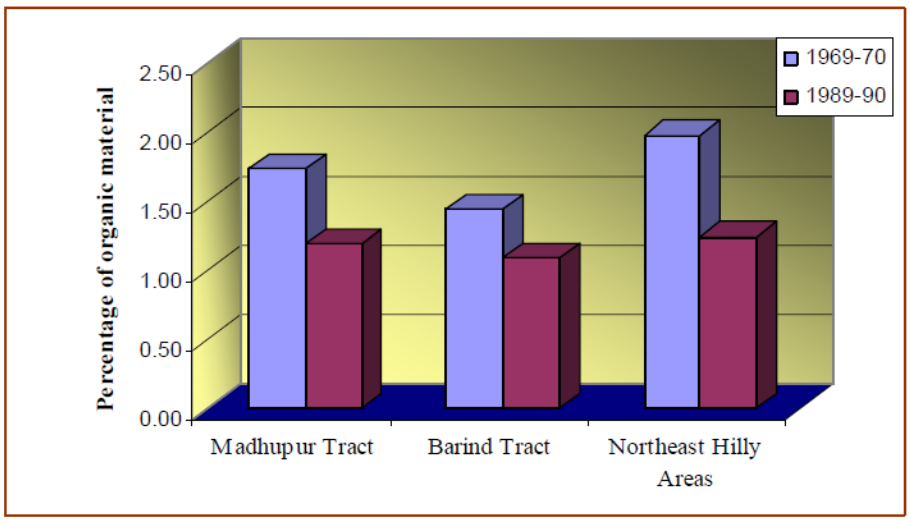
Table 2. Top five polluters that causes air pollution (Islam, *et. al.*, 2001)

Rank	Industrial sector	Emission (tons/Year)	% Contribution	Cumulative Percent
1	Food industry	146356.06	38.7%	38.7%
2	Cement/clay	62725.88	16.6%	55.3%
3	Pulp and Paper	51963.92	13.7%	69.0%
4	Textile	39831.01	10.5%	79.5%
5	Tobacco	16992.22	4.5%	84.0%

Arsenic contamination of groundwater is major environmental concern in Bangladesh. Arsenic was first detected in groundwater in 1993. Contaminated wells exceeding the Bangladesh standard of 0.05mg/l have been identified in 61 of the country's 64 districts and in about 30% of the total number of hand pump tube wells (ADB 2004). It has been estimated that a population of 25 to 36 million are exposed to arsenic contamination and related health risks. The number of identified arsenicosis patients was about 13,000 in mid 2002. However, there are a large number of patients still remain unidentified.

Land degradation occurs in the form of loss of (i) soil quality through salinity intrusion, fertility decline, nutrient imbalance and (ii) top soil loss through erosion (ADB 2004). The soils of Bangladesh, in general, are very fertile and productive. However, high cropping intensity, loss of organic matter and imbalanced use of fertilizer and pesticides have taken a very serious toll on overall soil health. Soil quality and/or productivity is on decline.

One of the major consequences of this practice is loss of organic matter, one of the best indicators of soil quality. The percentage of soil organic matter has deteriorated over the past decades. Karim *et. al.* (1994) reported the highest deterioration in Barind Tract, Madhupur Tract, Himalayan Foothill areas, and the floodplain of Tista, Karatoya and Bangali and in the northern hill regions.



Changes in Organic matter from 1969-70 to 1989-90 (Karim *et. al.*, 1994)

Land degradation is a common phenomenon in the hilly and undulated areas of Bangladesh. About 10% of the country's land is hilly (Khisa, 1997).

Table 3. Hilly Areas of Bangladesh (Khisa, 1997)

Region	Area in Hectares	Percent Hilly
Chittagong Hill Tracts	1,240,889	75.6
Chittagong	235,216	14.2
Sylhet	152,922	9.2
Region	**Area in Hectares**	**Percent Hilly**
Jamalpur	6,316	0.38
Mymensingh	1,431	0.09
Comilla	1,226	0.10
Feni	1,226	0.07

Land degradation in the form of soil erosion is mostly human induced and is more serious in Chittagong and Chittagong Hill Tracts. The Unclassed State Forest (USF) area of about 0.88 million hectares, since has no forest management, got drained of its valuable tree resources under the permits issued by the district administrative authorities, against the high demand of wood (ADB 2004).

Shahid (1994) has calculated erosion rate per hectare. He found the erosion to be as high as 120 tons per hectare per year in deforested hill slops, compared to the erosion rate of 2.7 to 7.2 tons per ha per annum in the mixed forest-covered land.

Table 4. Valuation of losses from land degradation (Karim et. al. 2001; Haque 2002)

Item	Total loss	Costs in million taka/year (% of GDP of 1997 at constant market price)
Water erosion – production loss	1.06 mt/yr	6613.84
Water erosion – nutrient loss	1.44 mt/yr	25,576.46
Soil fertility decline – production loss	4.27 mt/yr	26,641.48
Soil fertility decline – additional input needed to replace	1.22 mt/yr	21,668.25
Salanization (production loss)	4.42 mt/yr	27,577.25
A. Productivity loss		**60,832.57 (3.33%)**
B. Nutrient loss		**47,244.71 (4.37%)**
C. Estimated total loss		**108,087.28(7.70%)**

Riverbank erosion is a perennial problem in this country. The Bangladesh Water Development Board (BWDB) has estimated about 1200 km of riverbank is actively eroding and more than 500 km face severe problems related to erosion (ADB 2004). It is estimated that river erosion annually affects about 100,000 people living on the riverbanks.

Wetlands are valuable resource for agriculture-based economy of Bangladesh. Wetlands support huge production potential for fisheries sector. With the loss of

wetlands, the open water fisheries production is declining in Bangladesh (ADB 2004). Besides the fisheries, wetlands function as retention area that controls floods, recharges the ground water, work as irrigation water source etc.

Table 5. Area of fisheries (BBS, 1999)

Types	Area (ha)
Ponds and tanks	915,506
Dighis, beels, haors etc.	417,854
Artificial reservoir	90,688
Rivers and canals	830,040
Floodlands	2,834,008
Estuaries	183,401
Irrigated canals	6,073
Total	**5,277,571**

According to MPO (1987), the total estimated area of floodplain was 5.5 m ha at the end of June 1985 after 0.8 m ha had been dried up through flood protection measures from the estimated 6.3 m ha of floodplain. Another 3.36 m ha of floodplain were brought under protection from flooding (MPO,1990). Total area of floodplain now stands at 2.8 m ha (BBS, 2000a).

The problems in Bangladesh Forestry are many folds and intricate with various other sectors. According to the Forestry Master Plan drawn in 1993, the actual forest cover of the country will not exceed 6%. Per capita forestland in Bangladesh has shrunk to a 0.022 ha, one of the lowest in the world. The annual deforestation rate in South Asia is 0.6% and it is 3.3% for Bangladesh (Gain 1998). Available information suggests that currently only 10% of the 1,20,000 hectare sal forest in Dhaka, Rangpur, Mymensingh, Tangail, Dinajpur and Rajshahi districts carries a tree cover of Sal (ADB 2004). In Tangail District alone the sal forest has shrunk to 1,000 hectare in 1990 from 20,000 in 1970. There has been a great deal of deforestation in the Chittagong Hill Tracts (CHT). Deforestation and destruction of natural reserves in the CHT was further intensified by development activities such as dam, highway, road construction and other infrastructure development. Khan, Mizan R. (1998) refers that crisis related with participatory approach to manage forest resource is severe in Bangladesh.

The number of species, especially the flora and invertebrates, of Bangladesh are not known for certain. Khan (2001) reported that Chittagong zone alone possess over 2,259 species of flowering plants. Hassan (2003) stated that there are over 700 species of flowering plants, 500 species of medicinal plants, 300 species of mangrove and mangrove associate plants and 300 species of wetland plants in Bangladesh. The fauna, especially the wildlife includes 125 species of mammals, 750 species of birds, 500 species of fishes, 125 species of reptiles and 9 species of amphibian.

Bangladesh has lost about 10% of its mammalian fauna, 3% avifauna and 4% reptile during the last 100 years. IUCN Bangladesh has identified 201 species of wildlife in the country are threatened under different degree of extinction risk. Loss of species is mostly

coupled with loss of habitat. For most of these endangered species the forest and wetlands are the last refuge. Forest cover, is also under constant threat. Forests are increasingly being degraded and denuded by encroachment and faulty management practices. Wetlands are in worse condition compared to that of forests. Wetlands are being converted into agricultural land and substantially degraded through the so-called development activities.

Table 6. Status of inland and resident vertebrates of Bangladesh (IUCN, 2000a)

Group	Total no. of Living species	Extinct	Threatened				Data Deficient (DD)	Not Threatened (NO)
			Critically Endangered (CR)	Endangered (EN)	Vulnerable (VU)	Tot -al		
Fishes (freshwater & brackish water)	266	0	12	28	14	54	66	146
Amphibians	22	0	0	3	5	8	7	7
Reptiles	109	1	12	24	22	58	39	12
Birds	388	2	19	18	4	41	158	189
Mammals	110	10	21	13	6	40	53	17
Total	**895**	**13**	**64**	**86**	**51**	**201**	**323**	**371**

Table 7. Status marine and migratory vertebrates of Bangladesh (IUCN, 2000a)

Group	Total no. of Living species	Extinct	Threatened				Lower Risk (LR)	Data Deficient (DD)	Not Threatened other than CR, En, VU, LR and DD
			Critically End-angered (CR)	End-angered (EN)	Vulnerable (VU)	Total			
Fishes (marine)	442	0	0	1	3	4	0	0	438
Reptiles (marine)	17	0	1	4	0	5	0	0	12
Birds (migratory)	240	0	0	2	4	6	6	4	224
Mammals (marine)	3	0	0	2	1	3	0	0	0
Total	**702**	**0**	**1**	**9**	**8**	**18**	**6**	**4**	**674**

The contribution of Bangladesh to green house gas emission is considered to be very negligible in the global context of this issue. But her vulnerability to climate change is considered to have massive and disastrous consequences for Bangladesh. IPCC impact assessments identify Bangladesh as one of the most susceptible countries of the world. These impacts range from an overall increase in sea level, atmospheric temperature, and rainfall to more intense natural disasters in the form of floods, cyclones, storm surges, drought and others consequential impacts. The largest impact of global warming will be felt in the water resources of Bangladesh. Many projections suggest greater variability in future monsoon patterns, with severe impacts upon agriculture and other related sectors due to either excess flow or severely low flows and draughts in other years.

The coastal areas face the primary risk of inundation and the entire zone is predicted to have greater vulnerability to cyclones and storm surges. Coastal areas of Bangladesh will be affected by drainage congestion due to raised riverbeds, higher water levels, salinity intrusion, reduced drainage, higher sea level etc.

Day by day the landscape of Bangladesh is changing, some rivers are drying, some parts of the country are becoming desert, seasons are changing, areas of forest are reducing, and productivity of the nature is declining in Bangladesh. All these environmental issues, which should be effectively addressed in the environment policy, have negative impact on the socio-economic development of Bangladesh.

> *Think globally, act locally is a popular environmental slogan. Nature is a seamless global whole. The world's natural environment is intricately inter-wove* (Desai, U. 1998).

Therefore it is needed to handle the environmental issues in an international cooperative manner. Otherwise positive activity of one country may not have any significant positive impact on the environment due to the negative activity or ignorance activities of other countries. Environment policy of Bangladesh should create the provision to adopt the environment related world initiatives.

Bangladesh has an environment policy which was formulated on 1992. At that time it was a new experience for Bangladesh to deal with environment policy. After long period of 15 years of implementation of that policy, now it is needed to analyze the outcomes of that policy and to rethink about the effectiveness of that policy. Moreover during this period a lot of researches have been carried out on environmental issues and capacity of the government, civil society and other stake holders of Bangladesh have been enhanced to put worthy policy input and to formulate a better environment policy for Bangladesh.

This essay will analyze the environment policy of Bangladesh. It is needed to examine whether the Environment Policy is not capable to fulfill effectiveness of a modern and good environment policy. Through this process it is will be analyzed whether the Environment Policy of Bangladesh needs to be reviewed.

1.3 Rationale of the thesis

Nowadays every government initiatives of Bangladesh are directed and guided by the only national strategic paper, PRSP (Poverty Reduction Strategy Paper). Principal objective of this national policy is to address the poverty by ensuring sustainable socio-economic development. The word "sustainable" is very vital for Bangladesh perspective; here sustainability refers those socio-economic developments that create more positive externalities than the negative externalities in the society, and the type of growth which will prevail for a long period. As Bangladesh is an agriculture based disaster prone country, it has to put emphasis on environmental issues before taking any initiative to protect environment and to make the initiative sustainable. Therefore an effective and efficient environment policy is needed for Bangladesh to guide and to control every initiative for its sustainability and environment protection. This thesis paper will highlight weakness of the environment policy of Bangladesh and why this policy should be reviewed.

1.4 Research question

This research work will analyze content of the Environment Policy of Bangladesh to evaluate its capacity to ensure environment protection.

1.4A The main research question is:

Should The Environment Policy of Bangladesh be reviewed?

1.4B Through three sub-research question the main research question will be addressed. In which the comprehensiveness, effectiveness and the inclusion of modern / latest mechanism will be tested. Inclusion of all major issues refers the comprehensiveness of that policy. On the other hand, feature of an Environment Policy to provide adequate guideline for each issue indicates its effectiveness. At the end it is also needed to verify that whether all available modern environmental tools are suggested in this policy.

Sub-Questions

1. Does this policy address all major issues?
2. Are those issues properly addressed?
3. Does this policy adopt all available modern environmental tools?

Hypothesis

To protect environment from pollution and degradation Environment Policy of Bangladesh needs to be reviewed for revision or formulating a new Environment Policy.

1.5 Methodology

This paper is based on both secondary and primary information and materials. The theories and concepts of environment policy making have been consulted. Published literature in this policy has also been reviewed. Together, government documents related to environment policy and management have been consulted. Discussion and interview have been conducted with some officials of environment ministry of Bangladesh and some famous civil society members who are working in environmental field.

This paper will analyze the environment policy of Bangladesh by comparing it with the environment and environment policy related theories as well as policy of India and Malaysia. Methodologies that will be used in this paper are

1 . Content Analysis
2 . Expert Opinion

1.6 Limitations

1. Small span of time involved in research works
2. Environment policy of a first world country can be consulted
3. There may have other issues to justify the necessity of the review of this policy

4. Other environment related policies can be analyzed and discussed

1.7 Presentation Structure

Chapter Two – Policy Heritage
Chapter Three – Literature Review and Conceptual Framework
Chapter Four – Brief of Environment Policy of Malaysia / India / Bangladesh
Chapter Five – Comparative Analysis
Chapter Six – Findings
Chapter Seven – Conclusion.

Appendix One – Environment Policy of Bangladesh, 1992
Appendix Two –National Policy on Environment, Malaysia
Appendix Three – National Policy on Environment, India

Chapter Two: Policy Heritage

Bangladesh has a long past legacy of environment related policies. Huge numbers of policies are targeting the environmental issues. For that reason some over lapping may be observed. On the other hand, over lapping among different policies creates the confusion about different institutional role and responsibilities.

2.2 Policy Trend

In pursuance of the Stockholm mandate, the government of Bangladesh, like all other developing and developed countries, actively participated in the evolutionary process of protecting global environment. As a result, the first Water Pollution Control Ordinance was promulgated in 1973 followed by the promulgation of the Environment Pollution Control Ordinance in 1977. In 1985 Department of Pollution Control Ordinance was established which subsequently renamed and structured as Department of Environment (DOE) (Aminuzzaman, S. M. 2010).

2.3 Major Environment related Policies

The government has adopted a number of policies where environment and development issues have been addressed. Important policy documents in this respect are the Environment Policy (1992), the Forest Policy (1994), the Fisheries Policy (1998), the Water Policy (1998), the New Agriculture Extension Policy (1995), The Energy Policy (1995).

Besides these sectoral policies, the National Conservation Strategy (NCS) and especially the National Environment Management Action Plan, 1995 (NEMAP) have been formulated to provide action plans to respond to environmental issues and promote sustainable development.

These are potentially important in guiding and influencing the activities of the concerned Ministries and other governmental agencies. The policies of the Bangladesh Government have been and are developed mostly from a sectoral approach. However, the Water Policy, the Fisheries Policy and Agriculture Policy have cross-sectoral approach and tried to address environmental issues. These policy calls for a precautionary approach to minimize impact from other sectors like industry, transportation, urbanization, flood control etc (ADB 2004).

Policy documents generally refer to the principles that govern the action directed towards given ends. It provides a basis for plans, prescriptions and framework to maintain the dynamic growth of the sector.

2.3A PRSP (Poverty Reduction Strategy Paper)

It has given a major thrust on poverty reduction and pro-poor growth. Widespread dependence on environmental resource by majority of the population is emphasized in

this strategy paper and it envisaged integrating the environmental conservation issues problems like widespread resource depletion and ecological degradation, arsenic contamination and vulnerability to natural disaster under the overall pro-poor economic growth, especially under the rural growth policy.

PRSP will be a major guiding document that will shape government activities in the coming years. Environmental issues, as stated in the PRSP, are most likely to be seen as a cross-cutting issue and integrated into national poverty alleviation strategy.

2.3B NEMAP (National Environment Management Action Plan)

It was developed for a period of 10 years (1995 to 2005) still likely to have influence in shaping policy directives regarding the environmental issues (ADB 2004). It provides action plans for environmental development in combination with a set of broad sectoral guidelines which emphasis, inter-alia, the following (ADB 2004):

- Maintenance of the ecological balance and overall progress and development of the country through protection and improvement of the environment;
- Protection of the country against natural disasters;
- Identification and control of all types of activities related to pollution and degradation of environment;
- Undertaking environmentally sound development programs in all sectors;
- Sustainable long-term and environmentally congenial utilization of all natural resources.

2.4 National Environment Policy (NEP), 1992

The National Environment Policy (NEP), 1992 embraces a number of related different sectors including agriculture, industry, health, energy, water, land, forest, fisheries, marine, transport, housing, population, education and science.

The central theme of the Environment Policy of 1992 is to ensure the protection and improvement of the environment. It requires specific action in the development sectors of the country to facilitate long-term sustainable use of all natural resources.

It provides for amending the existing laws, formulating new laws and implementing the same. It also assigned the Ministry of Environment and Forests (MoEF) with the responsibility of co-coordinating the implementation of the policies and constituting a high level National Environmental Committee (NEC) with the head of the Government as its chairperson, exercising direction, supervision and overseeing the implementation of the policies.

2.4B Background of the Environment Policy formulation

According to Aminuzzaman, S. M 92010) the idea of environmental protection through national efforts was first recognized and declared with the adoption of the Environmental Policy 1992. In the formation of Environmental Policy, different actors and factors played some direct and indirect roles.

The actors were basically of two types, external and internal. Among external actors, United Nations General Assembly, international forum, international organizations, donor agencies (IDA, USAID, UNDP, ADB) were major players.

Internal actors include, environmental NGOs (CARDMA, BCAS, IUCN, FEJB, ADAB) government agencies i.e. Ministry of Environment and Forest (MOEF), DOE, Planning Commission, concerned ministries, consultants, bureaucrats, civil society and so on.

All the actors, whether external or internal, played very pertinent roles in the formulation of the Environmental Policy. An important step in this regard was the formulation of the national Environment Management Action Plan (NEMAP) by the Ministry of Environment with participation by some NGOs and other organizations.

In the formulation period, a number of external actors (i.e. outside the government) had played significant role. These actors include – bilateral and multi-lateral donor agencies, donor supported national and international consultants, NGOs dealing with environment and social activists. Although the MoEF was responsible for drafting the policy, in reality it was drafted by an informally organized Task Force composed of the major actors.

International donor agencies, experts from selected NGOs and some civil society bodies provided technical and back up support to the ministry. No separate funding was allocated for the drafting team of the Environment Policy (Aminuzzaman, S. M. 2010).

In fact it was going parallel with NEMAP, NCS, and other environmental projects of the government and which were financially supported by those projects. As a matter of fact the same group of actors were involved in the first draft of Environment Policy, NEMAP, and NCS.

One expert observed that the “draft of Environment Policy was the by-product of the NEMAP project. In which the role of the ministry was far too limited in the technical aspects of the preparation of the policy. Another observer therefore noted that “Environment Policy was essentially a brilliant policy document produced by a collation of external actors who not only drafted the policy but also helped the government to get it operational” (Islam, 2007).

2.5 List of Environment related laws

Laws and relevant Regulation	Major components
Environmental Conservation Act of 1995	The Environmental Conservation Act of 1995 empowered the MOEF to formulate rules and guidelines for the management. It also designates DOE responsible for enforcing the 1997 EIA procedures air pollution, water pollution, noise
Environmental Conservation Rules of 1995	Air pollution, water pollution, noise
EIA Guidelines of Industries of 1997	The EIA process is categorized into four classes, that is, green, amber A, amber B, and red, according to the degree of impacts
Environment Court Act. 2000	The act is passed to establish Environment Court for speedy disposal of cases concerning environmental offences as defined in the Environmental Law
Environmental Pollution Control ordinance 1997	Including national water quality standards according to the WHO guidelines, air quality standards, noise, solid waste management
Factories Act 1965	Air pollution, occupational health
Motor Vehicles Act 1939	Air pollution, noise
Non Agricultural Tenancy Act 1947	Land use
State Acquisition and Tenancy Act 1950	Land use
Acquisition of Waste Land Act 1950	Land use
Town Improvement Act 1950	Land use
Municipality Ordinance 1977	Land use
Local Government Ordinance 1982	Land use
Land Reforms Ordinance 1984	Land use
Land Reform Board Act 1989	Land use
Chittagong Hill Tract Regulation Act 1990	Land use
Pesticide Ordinance 1971	Amended in 1980 Toxic and hazardous substance
Agricultural Pest Ordinance 1962	Toxic and hazardous substance
Dangerous Drug Act 1930	Toxic and hazardous substance
Dangerous Drug Control Order 1982	Toxic and hazardous substance
Agriculture and Sanitary Improvement Act 1920	Toxic and hazardous substance
Poison Act 1930	Toxic and hazardous substance
Explosive Substances Act 1908	Modified in 1983 Toxic and hazardous substance

Laws and relevant Regulation	Major components
Explosive Act 1884	Toxic and hazardous substance
Municipality Ordinance 1977	Solid waste management
Laws and relevant Regulation	Description
Private Forest ordinance 1950	Forest Conservation
Forest Act 1927	Modified in 1973 Forest conservation, biodiversity conservation, soil conservation
Wildlife (Preservation) Act 1973	Amended 1974. Wildlife conservation, wetland management, biodiversity conservation
Private Fisheries Protection Act 1889	Biodiversity conservation
Conservation and Protection of Fisheries Act 1950	Coastal resources management, biodiversity conservation
Marine Fisheries ordinance 1983	Coastal resources management, biodiversity conservation, marine pollution
Territorial Water and Marine Zone Act 1974	Coastal resources management, marine pollution
Mines Act 1927	Mineral resources development and management
Petroleum Act 1934	Mineral resources development and management
Antiquities Act 1986	Cultural heritage
Antiquities Ordinance 1986	Cultural heritage
Policy for management of closed waterbody (Jalmahal) 1990	Water resources management
Water supply and Sewerage Authority Ordinance 1963	Amended in 1989 Water resources management
Inland shipping Ordinance 1976	Water resources management
Embankment and Drainage Act 1952	Water resources management
Water Hyacinth Act 1939	Water resources management
IWTA Ordinance 1958	Water resources management
Canals Act 1864	Water resources management
Irrigation Act 1876	Water resources management
EPC Ordinance 1977	Marine pollution

2.6 Conclusion

This chapter describes the environment related policy history in Bangladesh. At the same time, it highlights the formulation process of the National Environment Policy, 1992. Next chapter will cover the literature review and conceptual framework of this research work.

Chapter Three
Literature Review and Conceptual Framework

Environment is a cross-sectoral issue. At the same time it is very technical in nature. Different opinions exist regarding the capacity of developing countries to deal with such technical issue. This capacity includes the socio-economic capacity, human capacity and technological capacity. Developing country like Bangladesh is also suffering the lack of capacity to address environmental issues to mitigate the risk of climate change. Therefore an effective Environment Policy is needed for Bangladesh to ensure productivity of the environment and to protect the environment.

3.1 Literature Review

Environmental issues of Bangladesh are targeted as research issues by various domestic and international researchers. As Bangladesh is one of the mostly affected countries for climate change so environment specialist has tremendous concern about the climate change impact on Bangladesh.

Most of the researchers addressed environmental degradation which had been taken place in Bangladesh. Millat-e-Mustafa, M. (2002) concentrated on the forestry related issues. In his research he pointed the severe degradation that has taken place in forestry of Bangladesh.

Researcher Pagiola, S. (1995) emphasized on the environment related agricultural issues. In his essay he mentioned that Bangladesh has made tremendous progress in agricultural sector which increased the agricultural production tremendously. Due to this rapid growth in agricultural production Bangladesh partially succeeded to address food security for this huge and rapidly increasing population. He also referred that to increase the agriculture production Bangladesh has to use huge volume of fertilizer and other chemicals. Researcher pointed the impact of this chemicals and fertilizers on soil, air and water. He also refers that this impact may produce threat to sustainable agriculture development.

Population displacement in Bangladesh is also an outcome of the climate change as well as natural disaster. Lonergan, S.() mentions that Political Instability; Economic Tensions; Ethnic Conflict; and Environmental Degradation are the root causes of world's refugees. In his article he mentioned that population displacement is Bangladesh in a consequence of natural disaster.

CPD (2001) had a research on the environmental awareness status of Bangladesh. It also indicates initiatives that are taken by various sectors of Bangladesh to develop public awareness for environment protection and productivity.

It seems that though a good number of research work and articles are available in which environmental issues of Bangladesh are addressed but these research works are concentrated mainly in three broad heads. These are 1) Environment related sectoral Issues 2) Environmental degradation 3) Impact of climate change. All these research works transmit a common message; that is rapid environmental degradation is taking place in Bangladesh. This message creates the scope for my research work. As

degradation is continuous phenomenon in Bangladesh so it can be said that the Legal Framework, Institutional Framework and Policy Framework of Bangladesh is enough to address this environment degradation. Bangladesh has an Environment Policy which should guide all sectors and other policies to address environmental issues with a common goal. Therefore in my research I would like to examine whether the existing Environment Policy of Bangladesh reflects all the current environment concerns and if not, what can be done about? At the same time it can be evaluated that whether this policy should be reviewed to make it more effective to address all environmental issues.

3.2 Conceptual Framework

Continuation of environment degradation is an indicator for the necessity to review the present environment policy. But in my essay I shall use other measures to evaluate the necessity to review the Environment Policy of Bangladesh.

3.2A Environment policy should address all the major environment related issues (see 1.4B sub-question 1 and 2). At the same time each of those issues should be addressed adequately. To examine whether Environment Policy of Bangladesh addresses are the major issues adequately I shall compare this policy with the same of other countries. In my work I shall use the Environment Policy of Malaysia and India to find out the similarities and differences of these policies with the Environment policy of Bangladesh.

Malaysia is an Asian country that made tremendous economic progress in short while. On the other hand it also made remarkable progress in every spare of life. Socio-economic and demographic condition of Bangladesh have great similarities with that of Malaysia during the period while they started to make tremendous economic progress with a good pace. Therefore a lot of modern and innovative ideas can be extracted from environmental policy of Malaysia which can be incorporated and implemented in Bangladesh.

India is a neighbor country of Bangladesh. Socio-economic conditions of both of the countries are very similar. Moreover these countries are very populous which create the same sort of pressure to the environment. Though some sorts of differences exists in some aspects of these two countries; such as democratic norms, democratic practices, economic growth, political commitment, professional attitude and quality of the bureaucracy, knowledge power and fair interest of academician and civil society; but the cultural phenomenon of these two countries are very much same. On the other hand, most of the rivers of Bangladesh are generated from the mountains of India. So dependency exists between these two countries to handle economic issues in collaborative manner. Hence it is needed to know, understand the environmental policy of India to amend necessary change in the environmental policy of Bangladesh. Moreover, both of the countries face natural disaster at a time and in similar fashion.

3.2B An environment policy should be comprehensive enough to adopt all available environment instruments to protect environment from pollution (see 1.4B, sub-question 3). Stavins, R. N. (2002) refers that some of the environment policy are not effective because these polices adop only ‘Command-and-Control’ mechanism. He refers that to ensure the public participation and to increase the willingness of all concern parties to protect environment additional four environment instruments

should be adopted. These are charge systems; tradable permits; market friction reductions; and government subsidy reductions.

There are a lot of mechanisms under these instrument categories.

> *Within charge systems, I consider: effluent charges, deposit-refund systems, user charges, insurance premium taxes, sales taxes, administrative charges, and tax differentiation. Within tradable permit systems, I consider both credit programs and cap-and-trade systems. Under the heading of reducing market frictions, I examine: market creation, liability rules, and information programs. Finally, under reducing government subsidies, I review a number of specific examples from around the world. By defining market-based instruments broadly, I cast a large net for this review of applications.* Stavins, R. N. (2002)

Any pulic policy should mention what is the core issue, what should be achieved and how, what are the measures that should be under taken to achieve the goal. It is very natural in any type of political system that public policy are dominated by the interest of the influencial groups. But theoritically, public policy should be formulated to address the interest of the major stakeholders or mass popullation. Due to the critical role of influencial lobby usually public policy is biased towards the interest of the elite. Mentioned Goal, objective, strategy of a policy reflect the deep interest of that policy.

3.3 Indicators to evalute the necessity to review an Environment Policy

following three measuring tools will be used to evaluate the necessity to review the Environment Policy of Bangladesh

1. Whether this policy is addressing all major environmental issues will be examined by comparing the Environment Policy of Bangladesh with the Environment Policy of Malaysia and India (see 1.4B, sub-question 1 and 2.2A).

2. Whether this policy is addressing all major environmental issues adequately will be examined by comparing the Environment Policy of Bangladesh with the Environment Policy of Malaysia and India (see 1.4B, sub-question 2 and 2.2A).

3. Whether this policy prescribes all necessary environmental instruments by comparing the guidance of researcher Stavins, R. N. (2002) (see 1.4B, sub-question 3 and 2.2B).

4. Quality and explicity of the Policy Statement, Objectives, Goals and Strategies, Environmental Instruments.

3.4 Conclusion

Various researcher had concentrated their works on environmental issues of bangladesh. But they mostly concentraed on the impact of climate change and various degradation that had been taken place in bangladesh. Therefore it is needed to examine whether environment policy of bangladesh is not effective not address these degradation which leads the necessity to review this policy. Through three measuring

yardstick the main proposition of this resear work will be examined. Next chapter will provide brief description of Environment Policy of Malaysia / India and Bangladesh.

Chapter Four: Brief Description of Environment Policy of Malaysia / India / Bangladesh

This chapter will briefly discuss the Environment Policy of Malasia / India and Bangladesh. On the basis of the information incorporated in this chapter it will possible to compare these policies. Moreover this chapter provides the necessary information to analysis the Environment Policy of Bangladesh on the basis of the conceptual framework described in the previous chapter.

4.2 National Policy on the Environment, Malaysia

Malaysia is one of the fast moving developing countries that had made tremendous progress in social-economic arena as well as technological advancement within a short period. It has a great reputation in tourism business also. These achievements indicate that Malaysia must have an effective environment policy which ensures the balance between economic growth and environment protection. Malaysian cabinet approved National Policy on the Environment, Malaysia on 2 October 2002 (Appendix-2). This policy is also integrated with the vision 2020 of Malaysia.

4.2A Policy Statement

> *For continuous economic, social and cultural progress and enhancement of the quality of life of Malaysians, through environmentally sound and sustainable development*

Policy statement of this environment policy refers that all development activities of Malaysia should put emphasis on the soundness and sustainability of the environment. So balance between development and environment issues are clearly emphasized and mentioned here.

4.2B Objective of the policy

This policy has targeted very few (03) objectives.

1. *A clean, safe, healthy and productive environment for present and future generations.*
2. *Conservation of the country's unique and diverse cultural and natural heritage with effective participation by all sectors of society.*
3. *Sustainable lifestyles and patterns of consumption and production.*

First objective of the policy refers the mutual balance of interest and responsibilities of the present generation with that of the future generation regarding environmental issues. Second objective of the policy pointed out the necessity to address the mutual existence of cultural heritage and natural heritage. The third objective of this policy suggested sustainable lifestyle and patterns of consumption and production.

4.2C Principles

To achieve the mentioned objectives eight principles are adopted in this policy to harmonies economic development goals with environmental imperatives. These principles are:

1. *Stewardship of the environment*
2. *Conservation of nature's vitality and diversity*
3. *Continuous improvement in the quality of the environment*
4. *Sustainable use of natural resources*
5. *Integrated decision making*
6. *Role of the private sector*
7. *Commitment and accountability*
8. *Active participation in the environmental community*

Principles of Malaysian Environment Policy address the multidimensional aspects of environment pollution and protection. The mode of utilization of environmental resources for the betterment of human civilization as well as nature is emphasized. Policy formulation process, major stakeholders and their responsibilities, mode of participation and ownership in environment related activities, underline moral obligations, environmental and economic productivity are highlighted in these principles.

4.2D Strategy

Seven strategies are mentioned in this policy to address the targeted objectives and to obey the mentioned principles.

1. *Education and awareness*

It is mentioned that Environmental and development related awareness will be promoted through three basic means; education, training and information dissemination. Educational curriculum in all level will be targeted to incorporate environment related items. Environment related Research activities are encouraged and promoted. Public-private sector collaboration will be made to make environmental information available to the people.

2. *Effective management of natural resources and the environment*

This policy puts emphasis on environmental inventory and auditing. For better and easier management it is suggested to create zones to protect indigenous natural resources. Land management is based on the intension of meeting the demand of the present and future generation with a notion to maintain land stability, land capability and its carrying capacity. Very specifically instrument like resource mapping technique and geographical information system is suggested here.

To minimize land degradation some directives are mentioned in this policy to guide the mining policy as well as mining activities. Here priority is given to put highest effort to prevent land from degradation rather to extract resources from mine.

For forests policy suggestive guideline is targeting to ensure sustainable use of forests and its resources to make a balance between getting sustainable economic benefits and social stability of community inhabiting there.

In case of energy use, it is prescribed to set standards and to create provision for information dissemination. Here both use of fossil fuels and research on developing alternative of this fuel is encouraged.

3. *Integrated development planning and implementation*

Two very important environment supporting measures are addressed here. It is said that environmental related issues should be treated as local phenomenon. Locally designed approaches will be considered to address environmental issues in development work. On the other hand, it is suggested to put emphasis on environmental related social, economical considerations in developing and implementing any development projects or programs where natural resources are used.

4. *Prevention and control of pollution and environmental degradation*

The policy put emphasis on effective enforcement of monitoring and evaluating programs. To create initial agreement and to empower the major stakeholders, provision is created to allow the industries to set concern environmental standards. Corrective, preventive and precautionary measures are adopted to protect environment from pollution.

It is prescribed to take primary initiatives by the large firms which are operating in economic of scale. Small and medium firms will get voluntary support from large firs. Moreover Small and Medium Enterprises will take collaborative measures to adopt environmental friendly practices.

Pollution problem can be addressed by encouraging cleaner production technology, provision of common treatment facilities, creating industrial park. Policy guideline for agriculture policy is to promote integrated pest management and organic farming with environment friendly agriculture methods. Prescription for the transportation policy is to promote non-motorized transport, mass transport and sea transport. Any sort of investment in environmental infrastructure is encouraged in this policy. It is said that sound environmental management will be introduced to address environmental problem related with the use of toxic substance.

This policy provides the scope for the participation of public and civil authority to ensure the compliance of standards regarding industrial waste management by every industry and to strengthen emergency response capacity of each industry. Highest priority is given in the research and collaborative effort to handle this issue.

5. *Strengthening administrative and institutional mechanisms*

Networking among government agencies and all other sectors are suggested to ensure the participation of every blocks of the society. Each business units are empowered to set their own standards and implementation mechanisms. This policy explicitly expresses the committed of Malaysia to enhance the transboundary cooperation to handle environmental issues. Moreover it is suggested to take effective participation and initiatives to create international consensus to address environmental issues.

6. *Proactive approach to regional and global environmental issues*

It is prescribed to be committed to enhance the cross-boundary cooperation to handle environmental issues. Moreover it is suggested to take effective participation and initiatives to create international consensus to address environmental issues.

7. *Formulation and implementation of action plans.*

In this policy it is specifically mentioned that policy formulation and implementation should be evaluated and monitored by the National Development council with a view to ensure the sensible match between strategy formulated and resourced needed to implement those strategies.

4.3 National Environment Policy, 2006 of India

India is a neighboring country of Bangladesh. In fact, Bangladesh is surrounded by India. Huge similarities exist in the natural, cultural, environmental, demographical, social, political, economical, historical, anthropological perspective between these two countries. On the other hand, both of these countries are sharing some specific natural resources which should be regulated in similar manner by individual regulatory framework of the both countries. Therefore, it is rational to compare Environment policy of Bangladesh with that of India.

4.3A Acknowledgement

Environment policy of India is known as the National Environment policy, 2006. In the acknowledgement portion of this policy the participation of various stakeholders (experts in different disciplines, Central Ministries, Members of Parliament, State Governments, Industry Associations, Academic and Research Institutions, Civil Society, NGOs and the Public) in the formulation process of this policy is mentioned.

4.3B Preamble

It is mentioned in the preamble of this policy that previously environment management was contained in various policies (The National Forest Policy, 1988 National Conservation Strategy and Policy Statement on Environment and Development, 1992 and the Policy Statement on Abatement of Pollution, 1992, Agriculture Policy, 2000 National Population Policy, 2000 National Water Policy,

2002). To establish the necessary coordination among those policies and to minimize the existing policy gaps this policy is formulated.

Preamble refers the three foundational aspirations identified in this policy:

> *First, that human beings should be able to enjoy a decent quality of life; second, that humanity should become capable of respecting the finiteness of the biosphere; and third, that neither the aspiration for the good life, nor the recognition of biophysical limits should preclude the search for greater justice in the world.*

The constitutional obligations as well as the necessity of maintaining the balance among economic, social and environmental needs as recognized in the preamble. Issues (key environmental challenges currently and prospectively facing the country, the objectives of environment policy, normative principles underlying policy action, strategic themes for intervention, broad indications of the legislative and institutional development needed to accomplish the strategic themes, and mechanisms for implementation and review) that are included are mentioned in the preamble.

The dominant theme of this policy which is mentioned in the preamble is

> *While conservation of environmental resources is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihoods from the fact of conservation, than from degradation of the resource.*

4.3C Key Environmental Challenges: Causes and Impacts

Relations between environmental degradation with Population growth, Economic growth and economic activities, Poverty are identified as identified as fundamental challenges for environmental protection.

Environmental degradation adversely affects the human health which may increase the vulnerability of the poor. On the hand, poor are less aware about the environmental issues; therefore it is needed to increase the environmental awareness to protect environment from degradation and reduce the impact of environmental degradation.

Establishing legitimate access to and use of environmental resources is identified as institutional failure. It is also mentioned that some policy failure may increase environmental degradation. It refers that some subsidies may provide undesirable incentives to excessive use of some natural resources which may create huge environmental vulnerability.

Here some environmental issues (climate change, stratospheric ozone depletion, and biodiversity loss) are recognised as global phenomenon; therefore establishing and identifying responsibilities of each and every individual country is recognised as a difficult challenge for the global community.

4.3D Objectives of the policy

Seven objectives are identified in this policy. These are

I. Conservation of Critical Environmental Resources
II. Intra-generational Equity: Livelihood Security for the Poor
III. Inter-generational Equity
IV. Integration of Environmental Concerns in Economic and Social Development
V. Efficiency in Environmental Resource Use
VI. Environmental Governance
VII. Enhancement of Resources for Environmental Conservation

In the mentioned principles of this policy emphasis is given to the livelihood of the poor by ensuring environmental intergenerational equity. On the other hand, equity between the right of present and future generation is maintained by recognizing the need if inter-generational equity. Environmental productivity and resources are treated as the means of livelihood for the people. Efficient use of environmental resources as well as environmental governance is targeted here. At the same time, it is also prioritized that necessary resources will be mobilized for environment conservation.

4.3E Principles of the policy

There are fourteen principles that are mentioned in this policy. Some of these principles are sub-divided. Here human being is identified as the central issue of development. It is stated that for the betterment of human life all development issues will be emphasized environmental issues. All public policies will integrate concern environmental issues and will ensure the environmental standards. At the same time, formulating environmental standards is also stated in these principles. To protect the environment from degradation is it suggested that economic value of environmental resources will be determined. On the other hand, it is also mentioned that environment related legal liability will be designed. It is stated that in case of addressing environmental issues the interest of large number of people will be ensured and necessary decentralization will be encouraged. Notion to protect of endangered species is included in the principles. Prevention is preferred than recovering damages to protect environment from pollution. At the same time it is also said that

> *Lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*

4.3F Strategies and Actions

In this policy eleven broad strategies are selected as tools or mechanisms to achieve the targeted objectives. On the other hand broad strategies are sub-divided into several sub-strategies. Under each strategy / sub-strategy some actions are the initiatives that are needed to make achieve the expected objective of the strategy / sub-strategy.

4.3G Regulatory reform

‘Regulatory reform’ is identified as the first strategy. It is said that without having effective regulatory mechanism protection of environment can not be ensured effectively. This strategy is subdivided into three sub-strategies; these are Revisiting the policy and Legislative Framework, Process related reforms and Substantive Reforms.

Through Explicit identifying and integrating of environmental concerns in relevant sector policies, identifying areas for new legislation, taking steps to adopt and environmental assessment techniques, ensuring accountability of each level of the government to fulfill their environmental commitments the sub-strategy of ‘Revisiting the policy and Legislative Framework’ will be operationalised.

On the other hand, recommended approach and Framework for legal actions are mentioned as implementation framework for ‘Process related reforms’.

In ‘Substantive Reforms’ action related with Environment and Forest Clearance, Coastal Areas, Living Modified Organisms, Environmentally Sensitive Zones are mentioned. At the same time it is also emphasized that without having effective monitoring of compliance the effectively of regulatory reform will remain under doubt. Feasible Public-Private-Partnership model will be designed and local political institutions (Panchayati Raj Institutions and Urban Local bodies) will be involved to monitor the compliance. Besides all these using of economic principles in environmental decision-making is suggested to address the mentality that environmental resources are free good. In order to establishing the economic value of environment it is mentioned that environmental values will be incorporated in cost-benefit analysis. Environmental economic instruments will be introduced to address the unsustainable production and consumption.

4.3H Enhancing and Conserving Environmental Resources

4.3H(I) ‘Enhancing and Conserving Environmental Resources’ incorporates ten sub-strategies which are Land Degradation, Desert Ecosystems, Forests and Wildlife, Biodiversity, traditional Knowledge and Natural Heritage, Freshwater Resources, Mountain Ecosystems, Coastal Resources, Pollution Abatement, Conservation of Manmade Heritage, Climate change.

4.3H(II) Adoption of science-based and traditional land use practice, promotion of wasteland and degraded forestry are prescribed to address land degradation. It is also suggested that cultivation which is not ecologically viable will be replaced by sustainable alternatives. In addition to these initiatives agro-forestry, organic farming, environmentally sustainable cropping will be encouraged to prevent land degradation.

4.3H(III) Intensive water and moisture conservation will be ensured by adopting relevant science based and technical knowledge to address desert ecosystems. Local species will be utilized to enhance and expand green cover.

4.3H(IV) Necessity traditional entitlement of forest dependant community is recognized. At the same time it is also mentioned that the level of their entitlement will be regulated by the local community based organization. To ensure forestation a target has been set to increase forest land up to 33 percent of the total land area in

2012. Code of best management practice is prescribed to deal with dense natural forest. Plantation of only such trees which help conservation and sustainability of ecosystem will be promoted.

4.3H(V) With a view to protect the wildlife it is stated that

> *Expand the Protected Area (PA) network of the country, including Conservation and Community Reserves, to give fair representation to all bio-geographic zones of the country. In doing so, develop norms for delineation of PAs in terms of the Objectives and Principles of the National Environment Policy, in particular, participation of local communities, concerned public agencies, and other stakeholders, who have a direct and tangible stake in protection and conservation of wildlife, to harmonize ecological and physical features with needs of socio-economic development.*

4.3H(VI) Protecting the biodiversity is recognized as an essential initiative to improve and protect the improved crop varieties. To support this notion it is advised that during appraising any development project necessary cost-benefit analysis will be make considering the value of biodiversity resources or near the upper end of the range of uncertainty. On the other hand, this policy defines the traditional knowledge explicitly and recommended it as the theoretical foundation to address biodiversity and other natural resources. Providing proper intellectual property rights and patent right is suggested as mechanism to protect and promote traditional knowledge. Preservation of natural heritage including biodiversity hotspots is emphasized to address Eco-system diversity and Eco-tourism.

4.3H(VII) In this policy issues related with freshwater resources are addressed by addressing river system, ground water and wetlands. It is mentioned that research in glaciology will be promoted to evaluate the impacts of climate change on glaciers and river flows. Integrated river basin management along with integrated conservation and wise use of wetlands are emphasized here. Afforestation on the banks and catchment of river and stakeholders participation is highlighted here.

4.3H(VIII) Several activities are identified to address ground water. Contribution of water needs to be explicitly recognized in electricity tariff and diesel price. Efficient water use techniques and prudent use of fertilizer, pesticides are promoted. Industrial waste management, volume of water consumption by any industry and productivity against per unit water are addressed here. Ground water mapping, rain water harvesting are highlighted in this policy.

4.3H(IX) National inventory of wetlands and regulatory mechanism for wetlands are advised here. On the other hand, it is mentioned that impacts on wetlands of significant development project should be identified.

4.3H(X) Mountain ecosystem will be protected by ensuring best practices in infrastructure and tourism facility development. At the same time tourism will be regulated to control the entrance into the mountain. Through land use management, water shed management productivity of the mountain will be addressed. Particular unique mountains will be recognized as ‘Incomparable Values’.

4.3H(XI) In case of Coastal Resources this policy covers technology dissemination and promotion of activities based on such techniques. It recognizes that sustainable

management of mangroves into the forest regulatory mechanism is essential. It also precisely mentions the need to address sea-level rise and effectiveness of existing ship breaking regulations.

4.3H(XII) Pollution abatement is addressed by separately addressing the pollution issues related with air pollution, water pollution, soil pollution and noise pollution.

4.3H(XIII) Conservation and adoption of renewable energy technologies including hydropower, dissemination of environment friendly cooking approach are prescribed to protect air from pollution. On the other hand, monitoring and enforcement of emission standards for both point and non-point sources are emphasized here. It is advised that a national strategy for urban transport to ensure adequate investment in low polluting mass transport systems.

4.3H(XIV) Introducing Public-Private-Partnership and capacity enhancement of State and Local Government is advised to address sewage treatment related water pollution. At the same time research and development of low cost technologies for sewage treatment is promoted. Encouraging Integrated Pest Management, using Biodegradable Pesticide and incorporating groundwater in price policies of agriculture inputs are also prescribed in this policy.

4.3H(XV) To address the soil pollution follow are mentioned in this policy

- *Develop and implement viable models of public-private partnerships for setting up and operating secure landfills, incinerators, and other appropriate techniques for the treatment and disposal of toxic and hazardous waste, both industrial and biomedical.*
- *Survey and develop a national inventory of toxic and hazardous waste dumps, and an online monitoring system for movement of hazardous wastes.*
- *Strengthen the legal arrangements and response measures for addressing emergencies arising out of transportation, handling, and disposal of hazardous wastes, as part of the chemical accidents regime.*
- *Strengthen the capacities of local bodies for segregation, recycling, and reuse of municipal solid wastes*
- *Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials.*
- *Promote organic farming of traditional crop varieties through research in and dissemination of techniques*
- *Promote biodegradable and recyclable substitutes for non-biodegradable materials, and develop and implement strategies for their recycle, reuse*
- *Develop and enforce regulations and guidelines for management of e-waste, as part of the hazardous waste regime.*
- *Promote, through incentives, removal of barriers, and regulation, the beneficial utilization of generally non-hazardous waste streams such as fly ash, bottom ash, red mud, and slag, including in cement and brick making, and building railway and highway embankments.*

4.3H(XVI) Noise pollution will be addressed by setting noise standards and norms for different environment. Routine monitoring of noise standards compliance is prescribed.

4.3H(XVII) To conserve the manmade heritage it is mentioned that environmental especially air standards for different manmade heritage will be set. On the other hand, it is committed that monitoring and enforcement of environmental standards in heritage sites will be ensured.

4.3H(XVIII) This policy addresses the climate change issue. It acknowledges the principle of common but differentiated responsibilities and respective capabilities of different countries in respect of both mitigation of GHGs, and adaptation measures. India thinks the Equal per-capita entitlements of global environmental resources to all countries. Here the Indian commitment to reliance on multilateral approaches and Participation in voluntary partnerships with other countries both developed and developing, to address the challenges of sustainable development and climate change are mentioned. Participate in Clean Development Mechanism (CDM) are encouraged here. Interestingly this policy indicates the over-riding priority of the right to development.

4.3I Environmental Standards, Management Systems, Certification and Indicators

This policy refers to set up a permanent machinery comprising experts in all relevant disciplines to review notified ambient and emissions standards in the light of new scientific and technological information. On the other hand, strengthening the testing infrastructure and network for monitoring ambient environmental quality are also emphasized.

Adoption of ISO 14000 will be promoted in industrial production and all medium and large scale goods and services procurement. Commitment to formulate "Good Practice Guidelines" for ecolabels to enhance their scientific basis, transparency, and requirements of participation are mentioned here.

4.3J Clean Technologies and Innovation

- *Encourage capacity building in the financial sector for appraising clean technology switchover project proposals.*
- *Set up a mechanism to network technology research institutions in the country; and promote dissemination of new technologies developed both in India and abroad.*
- *Consider use of revenue enhancing fiscal instruments to promote shifts to clean technologies in both existing and new units.*
- *Promote adoption of clean technologies by industry, in particular in the small and medium sector, through regulatory and fiscal measures, and standards setting.*

4.3K Environmental Awareness, Education, and Information

Publicly accessible environmental information system prescribed in this policy. Scientifically valid environment will be incorporated in the curricula of formal education, at primary, secondary, tertiary, and professional levels. On the other hand it is also said that special mid-career training programs may be conducted for groups with special responsibilities. This policy acknowledge the necessity of preparing and implementing a strategy for enhancing environmental awareness among the general

public, and special groups through diverse media catering to the different target groups.

4.3L Partnerships and Stakeholder Involvement

Public-Community Partnerships, Public-Private Partnerships, Public-Community-Private Partnerships, Public-Voluntary Organization Partnerships, Public-Private-Voluntary Organization Partnerships are suggested in this policy to address environmental issues. At the same time this policy also emphasized on the Youth's strength in protection and conservation of environment.

4.3M Capacity Building

Review the present institutional capacities at the Central and State levels, Prepare and implement suitable programs for enhancement of the capacities, Incorporate in all environmental programs a capacity development component are suggested here. This policy recommends ensuring continuous up gradation of knowledge and skills of the scientific and technical personnel involved in environmental management in public institutions at all levels.

4.3N Research and Development

Key areas of research which are identified here are

-Taxonomies of living natural resources.

-Research leading to better understanding of ecological processes and pathways.

-Research which provides direct inputs to policy making.

-Technologies for environmental management and clean production.

It is said that a research program in priority areas within the Government, with expected outputs clearly specified will be established. On the other hand, commitment of the Indian government to encourage research in priority areas outside the Government, with necessary financial and institutional support is mentioned here.

4.3O International Cooperation

Availing of multilateral and bilateral cooperation programs, participating in mechanisms and arrangements under multilateral agreements and providing assistance to other developing countries are prescribed in this policy.

4.3P Review of the Policy

- *Undertake consultations every three years with groups of diverse stakeholders*
- *In the third of the three-year reviews, undertake a more comprehensive examination of the scientific and policy understanding of environmental issues, redefine the Objectives and Principles, and recast the Strategic Themes for Action. Anew National Environment Policy should be the outcome.*

4.3Q Review of Implementation

Implementation of this policy is emphasized. It is said that the Cabinet or a nominated Committee of the Cabinet may be requested to review the implementation of the National Environment Policy, once a year, within three months from the close of the previous fiscal year. The findings of the review should be publicly disclosed, so that stakeholders are assured of the seriousness of the Government in ensuring implementation of the Policy.

4.3R Process of Formulation of this Policy

The preparation of this Policy has involved inputs and consultations with diverse experts, and stakeholders.

4.4 Environment policy of Bangladesh, 1992

4.4A According to Aminuzzaman, S. M. (2010) objectives of this Policy are to:

- ✓ Maintain ecological balance and overall development through protection and
- ✓ Improvement of the environment;
- ✓ Protect the country against natural disasters;
- ✓ Identify and regulate activities which pollute and degrade the environment;
- ✓ Ensure environmentally sound development in all sectors;
- ✓ Ensure sustainable, long term and environmentally sound use of all national resources; and,
- ✓ Actively remain associated with all international environmental initiatives to the maximum possible extent.

Environment policy of Bangladesh addressed 15 broad sectors to address overall environmental issues. These sectors are 1) Agriculture 2) Industry 3) Health and Sanitation 4) Energy and Fuel 5) Water Development, Flood Control and Irrigation 6) Land 7) Forest, Wildlife and Bio-diversity 8) Fisheries and Livestock 9) Food 10) Coastal and Marine Environment 11) Transport and Communication 12) Housing and Urbanization 13) Population 14) Education and Public awareness 15) Science, Technology and Research. This policy does not has any policy statement, strategy, principles.

For each of the sectors some goals and targets are mentioned. Then the necessary action plan to achieve these goals and targets are also mentioned.

4.4B Agriculture

- ✓ All steps taken and technologies adopted for agricultural development and attainment of self-sufficiency in food should be environmentally sound.
- ✓ While in the process of development all resources bases are to be conserved and their environmental compatibility and long term use are to be ensured.
- ✓ The application of agro chemicals, artificial inputs which adversely affect the fertility as well as organic properties of the soil, and which also produce adverse

impacts on man and animals are to be regulated. Safety of agricultural workers in applying those inputs is to be ensured. At the same time, the application of different natural fertilizers and insecticides is to be encouraged.

- ✓ Assist environmentally sound development in agriculture through appropriate changes in production management and production relations with a view to protect and improve the environment and ensuring use of resources.
- ✓ The use of environment friendly fibers like jute and jute products are to be increased.

Action plan

- o Field based national level survey to know the soil condition
- o Effective steps will be taken on the basis of results of such a survey
- o Use of chemical insecticides and pesticides has to be regulated
- o Production, import and use of these harmful chemicals have to be phased out gradually and prohibited as soon as possible
- o Use of quickly degradable chemicals may be allowed
- o Organic method of pest control will be expanded
- o Integrated pest management will be introduced
- o Proper use of fertilizer will be ensured
- o Use of organic fertilizer will be increasingly emphasized
- o Imported seeds, seedlings and plants will be properly quarantined
- o Through protection and multiplication of frogs, lizards, snakes, turtle and other wild animals, natural methods of pest control will be encouraged
- o Steps should be taken to establish an agricultural system based on local ecosystem
- o Use of synthetic fibers will be reduced
- o Use of natural fibers will be encouraged

4.4C Industrial Sector

- ✓ Step by step, adopting corrective measures against industries polluting environment.
- ✓ Ensure Environmental Impact Assessment (EIA) in establishing all new industries both public and private sectors
- ✓ impose ban on establishment of industries producing goods which cause environment pollution; close down such existing industries gradually and discourage use of such polluting products through development / introduction of their substitutes which are environmentally sound
- ✓ Encourage development of environmentally sound and appropriate technology and initiatives on research and extension in the fields of industry. Balance such initiatives with the best use of labor and provision of proper wages.
- ✓ Prevent wastage of raw materials in industries and ensure their sustainable use.

Action plan

- o Industries identified by the Department of Environment will take pollution control measures as soon as possible
- o Industries that are potential polluters will make provisions to introduce pollution control measures

- Steps will be taken to shift the industries located in residential areas to appropriate locations. Planned industrial zones will be delineated.
- Industries using heavy metals such as mercury, chromium lead, etc. will be initially discouraged and finally prohibited
- Polluting industries will install their own polluting monitoring devices
- To facilitate waste disposal management, 'waste permit / consent order' system will be established in the industrial sector.
- Recycling will be encouraged

4.4D Health and Sanitation:

- ✓ Prevent activities which are harmful to public health in all spheres, including development activities in the country
- ✓ Integrate environmental concerns into the national health policy
- ✓ Incorporate environmental issues is health education curriculum
- ✓ Develop healthy environment in the rural and urban areas
- ✓ Ensure healthy workplace for workers

4.4E Energy and Fuel:

- ✓ Reduce and discourage the use of those fuels which pollute the environment and increase the use of environmentally sound and less harmful fuels
- ✓ Reduce the use of fuel wood, agricultural residues etc. to meet energy need and increase the use of alternative energy sources.
- ✓ Adopt appropriate precautionary measures against adverse environmental impact of the use of nuclear energy and take preventive steps against nuclear radiation and pollution
- ✓ Developed improved energy saving technology and proliferate its use
- ✓ Conserve country's fossil fuel reserves and renewable sources of energy

4.4F Water development, Flood Control and Irrigation

- ✓ Ensure environmentally sound utilization of all water resources
- ✓ Ensure that water development activities and irrigation net-works do no create adverse environmental impact
- ✓ Ensure that all steps taken for flood control, including construction of embankments, dredging of rivers, digging of canals etc. be environmentally sound at the local, zonal and national levels.
- ✓ Ensure mitigating measures of adverse environmental impacts of completed water resources development and flood control projects
- ✓ Keep the rivers, canals, ponds, lakes, haors (wetland), baors (wetland) and all other water bodies and water resources free from pollution

4.4G Land:

- ✓ Formulate a balance and environmentally sound national land use policy and plan
- ✓ Prevent land erosion, preserve and increase soil fertility, and expand activities for conservation and environmentally sound management of newly accreted land
- ✓ Encourage land use systems compatible with various eco-system

- ✓ Prevent spread of salinity and alkalinity on land

4.4H Forest, Wildlife and Bio-diversity:

- ✓ Conserve, expand and develop forest to sustain the ecological balance and meet the socio-economic needs and realities
- ✓ Include tree plantation program in all relevant development schemes
- ✓ Stop shrinkage and depletion of forest land and forest resources
- ✓ Develop and encourage use of substitutes of forest products
- ✓ Conserve wildlife and bio diversity, strengthen related research and help insemination and exchange of knowledge in the concerned area
- ✓ Conserve and develop wetland and protect migratory birds.

4.4I Fisheries and Livestock:

- ✓ Ensure appropriate environment for the conservation and development of fisheries and livestock

4.4J Food:

- ✓ Ensure hygienically and environmentally sound methods for production, preservation, processing and distributing of food
- ✓ Dispose rotten or harmful food stuff and food crops in an environmentally acceptable manner
- ✓ Prohibit import of food items likely to create adverse impact on the environment and public health.

4.4K Coastal and Marine Environment:

- ✓ Ensure environmentally sound enervation and development of coastal and marine eco-system and resources
- ✓ Prevent all internal and external activities polluting the coastal and marine areas
- ✓ Strengthen necessary research to preserve and development of coastal and marine environment and resources
- ✓ Limit coastal and marine fish catch within tolerable regeneration limits

Action Plan

- o The ministry of environment and forest will establish a special cell to integrate protection, development and monitoring development programs for the coastal and marine environment
- o Newly accreted land in coastal areas will be handed over to the department of forest on a priority basis for stabilization of land and afforestation.
- o The navy will take precaution to prevent pollution of territorial waters. The department of shipping will monitor such activities
- o Local and national contingency plans will be drawn and funds made available to cope with accidental spillage of pollutants in the sea. Such programs will be coordinated at the regional level

- Appropriate measures will be taken on an emergency basis to remove and properly dispose garbage and waste of oil and oil products from ships at Chittagong and Mongla ports.

4.4L Transport and Communication:

- ✓ Ensure that road, rail, air and inland water transport systems do not pollute the environment or degrade the resources. Conduct EIS before undertaking related projects
- ✓ Ensure that vehicles and people using roads, rails, air and inland waterways do not pollute the environment and take steps to protect health of the workers running these transports.
- ✓ Control activities in inland ports and dockyards which cause pollution of water and the local environment.

4.4M Housing and Urbanization:

- ✓ Integrate environmental considerations into all housing and urban planning activities and research
- ✓ Extend environmentally sound amenities to all the existing urban and rural housing areas in phases
- ✓ Control housing and urban development schemes having adverse impact on the local and overall environment
- ✓ Focus greater importance on the role of water bodies in enhancing beautification of the cities

4.4N Population:

- ✓ Ensure integrated, planned and environmentally sound utilization of manpower
- ✓ Integrate environmental conservation and development concern in the pollution policy and action program
- ✓ Ensure the role of women in development
- ✓ Encourage utilization of unemployment manpower in development activities

4.4O Education and Public Awareness

- ✓ Integrate people in the spread of education and overall development of the country through eradication of illiteracy and increase in the rate of literacy
- ✓ Create widespread mass awareness regarding environmental conservation and improvement, sustainable, long term and environmentally sound utilization of all resources
- ✓ Ensure inclusion and dissemination of environmental knowledge and information in the formal and informal systems of education and media
- ✓ Induce spontaneous and direct participation of people in all environmental activities
- ✓ Incorporate environmental issues in all government and non-government program and also in such program for industrial and commercial workers.

4.4P Science, Technology and Research:

- ✓ Incorporate environmental pollution supervision and control measures into national science and technology policy
- ✓ Encourage necessary research and evolve technology to ensure long term, sustainable, environmentally sound utilization of all resources for conservation and improvement of environment
- ✓ Incorporate environment consideration as an integral part of priority areas for research and development within the framework of National and Technology Policy (1986)
- ✓ Consideration of environmental issues in all research activities by research and development institutions

Action plan

- o Counseling will be made available on management and control of environmental polluting keeping in view environmentally sound and sustainable technology
- o Research and technology innovation on environmental protection, development and proper utilization of resources will be strengthened.
- o Environmental considerations should be integrated in all priority areas highlighted in the National Policy of Science and Technology, 1986.
- o All research and development institution will specifically consider programs and revise them if needed.

4.4Q Legal framework

- ✓ Amend all laws and regulations related to protection of environment, conservation of natural resources, and control of environmental pollution and degradation with a view to meet present day's need
- ✓ Frame new laws in all sectors necessary to control activities concerning environmental pollution and degradation
- ✓ Ensure proper implementation of all relevant laws / regulations and create wide spread public awareness in this regard
- ✓ Ratify all concerned international laws / conventions / protocols which Bangladesh considers rectifiable and amend / modify existing national laws / regulations in line with the ratified international laws / conventions / protocols

4.4R Institutional Arrangements

- ✓ The ministry of environment and forest would coordinate the implementation of this policy
- ✓ A National Environment Committee with the head of the Government as the Chairperson would be constituted to give overall direction for implementation of this policy
- ✓ The ministry of Environment and forest would take timely steps for appropriate amendment and modification of this policy on the backdrop of changes I the state of environment and socio-economic and other needs of the country
- ✓ Department of environment will make final review and approve all EIS.

4.5 Conclusion

This chapter briefly discussed the environment policy of Malaysia, India and Bangladesh. On the basis of the information incorporated in this chapter comparison among these policies will be made in the next chapter.

Chapter Five: Comparative Analysis

Environment Policies of Malaysia / India and Bangladesh are briefly discussed in the previous chapter. This chapter will compare the content of the Environment Policy of Bangladesh with the content of the Environment Policy of Malaysia and India to identify the directives that can be incorporated in the Environment Policy of Bangladesh to make it more effective. Though policy of different countries could be different due to the contextual aspect but there are some features, norms of public policy that can be compared.

5.2 Policy Statement

Malaysian policy has a very specific 'Policy Statement' which provides the notion of that policy (see 4.2A). There is no 'Policy Statement' in the Indian policy as such but this policy has 'Preamble' which describes both the notion of this policy and the necessity of this policy (see 4.3B). Malaysian policy does not have any 'Preamble'. Environment Policy of Bangladesh does not have any 'policy Statement' or 'Preamble'.

5.3 Key environment Challenges: Causes and Impacts

Indian Policy identifies the key challenges of the environment of India (see 4.3C). At the same time causes and impacts related with these key challenges. Both the Environment Policy of Malaysia and Bangladesh did not mention the key challenges.

5.4 Objectives

Three objectives are mentioned in the Malaysian policy. These objectives are basically outcome oriented (see 4.2B). On the other hand, Indian policy identified seven objectives which are basically output oriented (see 4.3D). Environment Policy of Bangladesh mentions six explicit Objectives.

Some issues which are not addressed, in the light of the Environment Policy of India (appnd-3) and Malaysia (appnd-2), in the objective portion of this policy are

- **To maintain and enhance the productivity of the environment**

It is necessary to enhance and maintain the productivity of the environment to promote the agricultural growth and overall sustainability.

- **To maintain inter generation and intra generation equity**

Environment and its elements are the common property of the present and future generation as well as every member of every generation. So equity among those stakeholders should be kept under consideration.

- **To protect country's unique and diverse cultural and natural heritage**

It is necessary to protect and nurture the available cultural and natural heritage for the sake of civilization and social trust building.

- **To encourage and ensure stakeholder participation**

Environmental issues vary from place to place which creates the demand of locally designed environment programs and policies. Moreover monitoring and

implementation of environment regulation bears huge transaction cost which can be minimized by ensuring people's participation. Therefore stakeholder participation should be ensured.

- **Sustainable lifestyles and patterns of consumption and production.**

Both over consumption and unplanned or unsustainable production process are harmful to environment. Therefore these issues should be regulated through environment policy.

- **Livelihood security for the poor**

Each and every national activities of Bangladesh are now guided by the PRSP. Therefore it is wise to emphasis on the reduction of poverty through integrated approach of every national policy.

- **Integration of Environmental Concerns in Economic and Social Development**

Every economic and social activity has some level of impact on environment. Moreover sustainable development refers environmentally sound and friendly development. Therefore environmental integration of environmental concerns in economic and social development should be kept as a major objective of environment policy.

5.5 Principles

Environment Policy of Malaysia identified eight principles (see 4.2C) whereas Environment Policy of India mentioned fourteen principles (4.3A). Environment Policy of Bangladesh did not mention any Principles.

5.6 Strategy

Environment Policy of Malaysia mentions seven strategies (see 4.2D). Strategies are reflecting broad approaches and activities that will be adopted and executed to achieve the objectives of this policy. Environment Policy of India mentions eleven Strategies and Actions (see 4.3F). These strategies covers the environmental issues, Polluted environmental arenas, polluted and polluting substances, sectoral and common approaches, activities. Environment policy of Bangladesh addressed 15 sectors to address overall environmental issues (4.4A). For each of the sectors some goals and targets are mentioned. Then the necessary action plan to achieve these goals and targets are also mentioned. Targets / goals that are mentioned and the action plan that are prescribed to achieve those goals/ targets are analyzed below by comparing the approach mentioned in Environment Policy of Malaysia and Environment Policy of India.

5.7 Agriculture

Agriculture sector had dominated the economic sector of Bangladesh for long time. Still today agriculture has major contribution in the gross domestic product of Bangladesh. This sector is the source of livelihood for a huge number of citizens. But some of the activities related to this sector have harmful impact on environment. Therefore it is needed to maintain some balance between the growth and productivity of this sector with the impact of this sector on environment. On the other hand pesticide, chemical fertilizers and other inputs are pollution the soil, water and air. It is necessary to protect environment from this pollution and degradation. Therefore it

is needed to give specific but clearly understandable guideline for agricultural sector; so that every general citizen can understand the guideline. Following directives can be included in the Environment Policy of Bangladesh to address the environmental issues related with agriculture sector (see 4.4B)

- ✓ Explicit accounting of groundwater pollution in pricing policies of agricultural inputs, especially pesticides, and dissemination of agronomy practices.
- ✓ Encourage adoption of science-based, and traditional sustainable land use practices, through research and development, extension of knowledge, pilot scale demonstrations, and large scale dissemination, including farmer's training, and where necessary, access to institutional finance.
- ✓ Promote sustainable alternatives to shifting cultivation where it is no longer ecologically viable
- ✓ Encourage agro-forestry, organic farming, environmentally sustainable cropping patterns, and adoption of efficient irrigation techniques.
- ✓ Rationalization of restrictions on cultivation of forest species outside notified forests, to enable farmers to undertake social and farm forestry where their risk-return-term profiles are more favorable than cropping
- ✓ Encourage cultivation of traditional varieties of crops and horticulture by promotion of organic farming
- ✓ Promote organic farming of traditional crop varieties through research in and dissemination of techniques

5.8 Industrial Sector

For any developing country economic development is a major national agenda which can not be avoided but can be balanced with other major agendas. Economic development in free market mechanisms greatly depends on the role and efficiency of the private sector. Therefore t is wise to ensure the participation of the private sector in environment compliance by formulating its own guideline for environmental compliance. For SMEs is difficult to maintain environment compliance by keeping a competitive production cost. Therefore there is a chance of losing the competitiveness. To overcome this problem SMEs can take collaborative initiatives among themselves or with large organizations. Environmental pollution and degradation basically takes place due to the tendency of ‘tragedy of the commons’, ‘free rider attitude’. Therefore it is not wise to rely on self-compliance mechanisms of polluting sources. Public and civil authority should be developed, empowered to ensure the compliance. Following activities can be included in the Environment Policy of Bangladesh to address industry related environmental concerns (see 4.4C)

- ✓ Integrated Environment and development issues into the activities of groups including professional associations.
- ✓ Encouraging industries to develop policies that result in operations and products that have lower environmental impacts.
- ✓ Encouraging Industries, especially amongst the larger firms towards self-regulated and self-help in pollution control and prevention.
- ✓ Encouraging Private initiatives to establish and implement Environmental Management System (EMS).

- ✓ Promoting public and civil authorities to introduce proper risk assessment techniques and procedures, safe operational practices, and the building-up of adequate emergency response capacity and readiness amongst industry.
- ✓ Encouraging each business or industry to formulate codes of conduct for self-monitoring, self-evaluating and self-auditing of environmental performance.
- ✓ Encouraging regulatory authorities, Central and State, to institutionalize regional and cumulative environmental impact assessments
- ✓ Encouraging clustering of industries and other development activities to facilitate setting up of environmental management infrastructure, as well as monitoring and enforcing environmental compliance.
- ✓ Prepare and implement an action plan on the use of economic instruments for environmental regulation in specified contexts, including those relating to unsustainable production and consumption.
- ✓ Improve productivity per unit of water consumed in industrial processes, by making water assessments and water audits mandatory in identified industries and utilities.
- ✓ Suitable sites for dumping the toxic waste material may be identified and remedial measures may be taken to prevent the movement of the toxic waste in the ground water.
- ✓ Strengthen the monitoring and enforcement of emission standards for both point and non-point sources.
- ✓ Prepare and implement action plans for major cities for addressing air pollution
- ✓ Develop and implement public-private partnership models for setting up and operating effluent and sewage treatment plants.
- ✓ Prepare and implement action plans for major cities for addressing water pollution, comprising regulatory systems
- ✓ Take measures to prevent pollution of water bodies from other sources, especially waste disposal on lands.
- ✓ Enhance capacities for spatial planning among the State and Local Governments, with adequate participation by local communities, to ensure clustering of polluting industries to facilitate setting up of common effluent treatment plants
- ✓ Develop and implement viable models of public-private partnerships for setting up and operating secure landfills, incinerators, and other appropriate techniques for the treatment and disposal of toxic and hazardous waste, both industrial and biomedical
- ✓ Encourage Industries to participate in the Clean Development Mechanism (CDM) through capacity building for identifying and preparing CDM projects, including in the financial sector.

5.9 Health and Sanitation:

This is an innovative part of the Bangladeshi policy. Like Indian policy this policy also treats human as core issue of the policy. Therefore it is needed to address the health of the citizen. Moreover human are the most important element of the environment. There directives of the Bangladeshi Policy are not broad that it became vague proposal. On the other hand, these sorts of directives confuse the readers. As for example (see 4.4D)

‘Develop healthy environment in the rural and urban areas’

Here the term ‘healthy environment’ can be explained in various ways. The confusion of this directive is ‘healthy for whom?’ ensuring healthy environment is the ultimate objective of an Environment Policy. Inclusion of following guidelines will enrich this policy

- ✓ Encouraging investments in integrated environmental infrastructure including sewerage, drainage and solid waste management systems
- ✓ Identify key vulnerabilities of Bangladesh to climate change, in particular impacts on health.
- ✓ Environmental standards must reflect the economic and social development situation in which they apply. Setting environmental standards would involve several considerations, i.e. risks to human health, risks to other environmental entities, technical feasibility, costs of compliance, and strategic considerations.

5.10 Energy and Fuel:

Consumption of energy and fuel creates pollution to the environment. At the same time level of consumption of fuel and energy is a measuring scale for development as well as volume of economic activities. Therefore it is a great challenge for the Environment Policy of developing country which has been achieving economic growth of around 6 percent per year for last 10 years. It is mentioned in the Environment Policy of Bangladesh (see 4.4E)

‘Conserve country’s fossil fuel reserves and renewable sources of energy.’

This directive is confusing because we should conserve our non-renewable sources of energy rather the renewable sources of energy.

- ✓ Conduct Environmental Impact Assessment before implementing the projects for extraction of fuel and mineral resources.

Directives can be more specific and easily understandable by adding the following points

- ✓ To ensure efficient use of environmental resources in the sense of minimizing adverse environmental impacts
- ✓ Intra-generational Equity
- ✓ Inter-generational Equity

5.11 Water development, Flood Control and Irrigation

Environment policy of Bangladesh address the water related environmental concerns in a broad head (see 4.4F). It would be better if different type of water resources (fresh water, wetland, ground water, river and so on) are identified and addressed categorically. Directives are more concentrated on flood and flood control rather than to address water resource management. Impact of flood control and irrigation are also addressed here. Issues which are absent in this policy are

- ✓ Take explicit account of impacts on wetlands of significant development projects during the environmental appraisal of such projects
- ✓ Promote traditional techniques and practices for conserving village ponds
- ✓ Environmental audit on an emergency basis will be conducted
- ✓ Ratify the existing projects so that water table does not go down any further
- ✓ Seas, coastal zones, lakes, rivers, mangroves, wetlands, islands, sea grass, coral reefs shall be managed in an environmentally sound manner.
- ✓ Incorporate a special component in afforestation programs for afforestation on the banks and catchments of rivers and reservoirs to prevent soil erosion and improve green cover.
- ✓ Ensure availability of ground water potential maps.
- ✓ Support practices of rain water harvesting and artificial recharge and revival of traditional methods
- ✓ Prepare and implement a comprehensive strategy for regulating use of ground water

5.12 Land:

In Bangladesh agriculture sector has great contribution in the national economy, huge number of population depend on agricultural occupation, land productivity is necessary for food security. Therefore Environment Policy of Bangladesh should emphasis on land and soil pollution. Here issues like scientific based land use, soil erosion, land productivity, pollution related with salinity and alkalinity on land are addressed (see 4.4G). Following issues are not very much specifically mentioned in this policy

- ✓ Taking due account of the current and future needs of the community, land-use planning and implementation shall be made providing high emphasis on land stability, the need for land conservation, land capabilities and carrying capacities. In that case resource mapping technique and geographical information system will be used.
- ✓ Survey and develop a national inventory of toxic and hazardous waste dumps, and an online monitoring system for movement of hazardous wastes.
- ✓ Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials.

5.13 Forest, Wildlife and Bio-diversity:

It is difficult for a country like Bangladesh which has huge population to protect forest area and its resources because a lot of people's livelihood is dependent on this resource. For that reason day by day forest area of Bangladesh is reducing very quickly. On the other hand, reduction of forest areas and environment pollution has negative impact on wildlife habitats. A good coverage of forest area and healthy wildlife habitats is very much essential to keep environment healthy and to enhance the bio-diversity. Therefore these issues should be addressed with great sincerity in the environment policy. Though community forest is encouraged in this policy but that is not enough to ensure people's participation to protect forestry and its resources (see 4.4H). This section of the policy can be improved by incorporating the following directives

- ✓ Rationalization of restrictions on cultivation of forest species outside notified forests, to enable farmers to undertake social and farm forestry where their risk-return-term profiles are more favorable than cropping
- ✓ Give legal recognition of the traditional entitlements of forest dependant communities
- ✓ Formulate an innovative strategy for increase of forest and tree cover
- ✓ Formulate an appropriate methodology for reckoning and restoring the environmental values of forests
- ✓ Formulate and implement a "Code of Best Management Practices" for dense natural forests
- ✓ Promote plantation of only such species which are conducive to the conservation and sustainability of given ecosystems.
- ✓ Strengthen capacities and implement measures for captive breeding and release into the wild, identified endangered species.
- ✓ Review and tighten the provisions of relevant legislation to enhance their deterrence.
- ✓ Strengthen the protection of areas of high endemism of genetic resources ("biodiversity hot spots")
- ✓ Pay explicit attention to the potential impacts of development projects on biodiversity resources and natural heritage.
- ✓ Enhance ex-situ conservation of genetic resources in designated gene banks across the country.
- ✓ Genetic material of threatened species of flora and fauna must be conserved on priority.

5.14 Fisheries and Livestock:

Huge numbers of rivers are flowing in the main land of Bangladesh which creates the scope to have healthy and productive environment for fisheries. It is said that the major of the citizen of Bangladesh is fish and rice. But nowadays this is a myth because fish is very scarce and costly goods in Bangladesh. Native varieties of fishes are not at all cultivated but last few years Bangladesh made tremendous progress, silver revolution, in cultivating hybrid varieties of fishes. Therefore environment policy should provide effective guideline to ensure healthy and productive fisheries sector. On the other hand 'white revolution' of poultry sector, encouragement to promote livestock revolution through cultivating Black Bangle goat shows the notion of the country to make progress in livestock sector. Environment policy should have insight to protect environment through promoting sustainable and environment friendly approach or fisheries and livestock. This is very creative part of the Environment Policy of Bangladesh because here a local issue is targeted with local contextual aspect (see 4.4I). On the other hand there are some guidelines which are not very much practical in nature. In this policy it is mention that

'Over extraction of fish from ponds and wetlands will be prohibited. Similar prohibition will be imposed on shrimp fry and other fish resources'

This is a vague statement because most of the ponds are private property therefore it is not feasible to restrict an owner to stop from fishing in his own property.

5.15 Food:

This is the innovative section of the Environment Policy of Bangladesh which should be incorporated in the Environment policy of India and Malaysia (see 4.4J). But this section should provide some directives about the content and context of the Pure Food Ordinance and also its effective implementation. Here command and control based regulatory approach is suggested to protect food from contamination. But in real life this approach is not enough to ensure the pure and healthy food. The root cause of this problem is the failure of market mechanism; therefore by ensuring and developing market based economic approach will be more effective than command and control based mechanism. Moreover these two approaches can be suggested side by side. Therefore this policy can pursue these two approaches.

5.16 Coastal and Marine Environment:

Guidelines for coastal and marine environment in the Environment Policy of Bangladesh (see 4.4K) and India are very much similar. But Indian Policy addresses the institutional issue to address the coastal and marine environment.

5.17 Transport and Communication:

Following directives are mentioned in the Environment Policy of Bangladesh (see 4.4L)

- ✓ Ensure that road, rail, air and inland water transport systems do not pollute the environment or degrade the resources. Conduct EIS before undertaking related projects
- ✓ Ensure that vehicles and people using roads, rails, air and inland waterways do not pollute the environment and take steps to protect health of the workers running these transports.

Above two directives are vague or over ambitious in nature because it is not possible to stop pollution totally from transportation rather it can be reduced or optimum in quantity and less harmful in quality. Therefore to overcome the vagueness following directives can be incorporated

- ✓ Non-motorized transport as well as less polluting and mass transportation system such as integrated urban mass transport and sea transport system will be promoted.
- ✓ Formulate a national strategy for urban transport to ensure adequate investment, public and private, in low pollution mass transport systems.

5.18 Housing and Urbanization:

Indian and Malaysian Environment Policy do not address housing and urbanization issue as specific as it is mentioned in the Bangladeshi policy (4.4M). But this section should provide some directives about the content and context of the relevant laws and also its effective implementation.

5.19 Population:

This section of the policy is confusing. Most of the part of this section is related with people's participation and women involvement in environment protection (see 4.4N). Therefore the title of this section can be replaced by 'participation'. No suggestion is given here about the population control to protect environment. Moreover this section should clarify the impact of huge population on environment by comparing it with the impact of lesser population with higher consumption.

5.20 Education and Public Awareness

In the Bangladeshi policy Education and public Awareness related issues are address in non-specific approach (see 4.4O). But Indian policy addresses in more specific way. In Bangladeshi policy it is said that environmental education will be incorporated in educational activities. In the Indian what will be included in which level of education is mentioned. Education and awareness development is a main tool to protect environment from pollution and degradation. Therefore this section asks more detail directives which can be ensured by incorporating the following options

- ✓ Environment and development issues will be integrated into the activities of groups including professional associations.
- ✓ Efforts to promote environmental responsibility within the private sector will be encouraged, through their cooperation and active participation in environmental awareness and training programs.
- ✓ Environment and development related man power training will be designed.
- ✓ The environmental management capacity of all sectors shall be strengthened and enhanced by encouraging and supporting the establishment of centers of excellence in research and development ecological and environmental science, environmental technology, training and policy analysis.
- ✓ Mainstream scientifically valid environment content in the curricula of formal education, at primary, secondary, tertiary, and professional levels.
- ✓ Special mid-career training programs may be conducted for groups with special responsibilities

5.21 Science, Technology and Research:

All the three environment Policies emphasized to the research work, technology and scientific approach regarding environmental protection and productivity. Following directives will make this section more specific and purpose oriented

- ✓ Promote R&D in development of low cost technologies for sewage treatment at different scales
- ✓ The environmental management capacity of all sectors shall be strengthened and enhanced by encouraging and supporting the establishment of centers of excellence in research and development ecological and environmental science, environmental technology, training and policy analysis.
- ✓ Key areas of research are as follows (not in order of priority, which is changeable over time):
    - Taxonomies of living natural resources.

- Research leading to better understanding of ecological processes and pathways.
- Research which provides direct inputs to policy making.

✓ R&D in technologies for environmental management and clean production.
✓ Periodically identify and prioritize areas for research.
✓ Establish a research program in priority areas within the Government, with expected outputs clearly specified.
✓ Encourage research in priority areas outside the Government, with necessary financial and institutional support.

5.22 Legal framework

In the Environment Policy of Bangladesh following directives are mentioned

✓ Amend all laws and regulations related to protection of environment, conservation of natural resources, and control of environmental pollution and degradation with a view to meet present day's need
✓ Frame new laws in all sectors necessary to control activities concerning environmental pollution and degradation

These two sections can be more specific if following directives are added

✓ Identify emerging areas for new legislation
✓ Review the body of existing legislation in order to develop synergies among relevant statutes and regulations, eliminate obsolescence, and amalgamate provisions with similar objectives
✓ Integrating environmental concerns in relevant sectoral and cross-sectoral policies, through review and consultation
✓ Take steps to adopt and institutionalize techniques for environmental assessment of sector policies and programs
✓ Ensure accountability of the concerned levels of Government (State, Local) in undertaking the necessary legislative changes in a defined time-frame

5.23 Institutional Arrangements

Sectoral action plan is given in the Environment policy of Bangladesh where the name of institution is also mentioned but the specific job description for each institute is not given there. But no suggestion is given in that part to enhance the capacity of the institution. Moreover it is needed to address the administration related with environment regulation. Following directives should be incorporated

✓ Integrated and effective cooperation and coordination among government sectors and between government and other sectors shall be encouraged in order to achieve efficient environmental management and protection.
✓ Coordinated effort will be established for effective and efficient implementation, monitoring and feedback.
✓ Relevant legislation and standards shall be reviewed regularly and revised to ensure the continued effectiveness and coordination of laws.
✓ Particular attention will be paid to effective enforcement.

- ✓ Ministries and government agencies will be encouraged to established mechanisms to ensure that environmental considerations are integrated into their development projects and activities.
- ✓ Efforts to promote environmental responsibility within the private sector will be encouraged, through their cooperation and active participation in environmental awareness and training programs.
- ✓ Each business or industry will be encouraged to formulate codes of conduct for self-monitoring, self-evaluating and self-auditing of environmental performance.
- ✓ Cooperation between government agencies and among all sectors and stakeholders shall be promoted for the implementation of environmental standards, dissemination of information, and the inculcation of environmentally responsible attitudes throughout the society.
- ✓ The environmental management capacity of all sectors shall be strengthened and enhanced by encouraging and supporting the establishment of centers of excellence in research and development ecological and environmental science, environmental technology, training and policy analysis.

5.24 Language

There is official English translated version of Indian and Malaysian Environment policy. But there is no official English translated version of the Environment Policy of Bangladesh. It is easier to understand technical issues / words / jargons of a policy if the policy is translated into different languages especially in English.

5.25 Reader Friendliness

Environment Policy of India is very descriptive in which each part of that policy has a descriptive introduction to elaborate all the technical issues and concerns to the reader. On the other hand, Environment Policy of Malaysia is very short but specific in nature. This policy does not incorporate a lot of technical terms or jargons. Environment Policy of Bangladesh is neither descriptive not very short.

5.26 Conclusion

This chapter compares the Environment Policy of Bangladesh with the Environment Policy of Malaysia and India to identify the strengths and weaknesses of this policy. In the next chapter some findings will be mentioned by analyzing the content of this chapter.

Chapter Six: Analysis and Findings

Environment Policy of Bangladesh addresses some sectors to ensure the protection and development of environment. In the previous chapter content of that policy is mentioned with a comparison with the Environment Policy of Malaysia and India. In this chapter the findings of this essay will be mentioned by analyzing the information given in the previous chapter.

6.2 Environment policy of Bangladesh is officially written in Native (Bangla) language. No English version of this policy is available. Department of environment usually refers and uses an English version of this policy which is used in this essay. Sometime it happens that policies of developing country are formulated through policy transfer mode. In that case it is necessary to an English version of that policy to clarify the concept that is incorporated in that policy. On the other hand, as environmental issues are very technical in nature so it will be helpful for all stakeholder to understand that policy if it has official English version. Moreover as Bangladesh participates in various international environment related activities, Amin, M. R. (2005), therefore it should have an official English version of its major policies.

6.3 Mentioned Objectives of the policy

Environment policy of Bangladesh identified six objectives. Fifth objective (To ensure sustainable, long-term and environment sound use of all natural resources) is confusing; here the terms ‘sustainable’, ‘long-term’ and ‘environment sound’ need to be clearly described because these concepts are interrelated and overlapping to each other in nature. Therefore objectives of this policy should be more specific and it should address the core issues.

Environment and its resources are the property of the present and future generation. Therefore it is needed to address this issue through appropriate objective setting. As poor suffers more due to the damage and pollution of the environment, they should get special care through environment policy. Moreover major policy guideline for Bangladesh is to reduce the poverty level. So poverty reduction should also be addressed in the objective of the policy. Environment is a complex issue that can not be addressed through utilization of government agencies participation of all sectors as well as the people’s will is needed to formulate and implement an effective environment policy. Environmental issues need to be addressed through holistic approach by integrating the environmental issues in all social and economic activities. But these issues are not properly addressed (see 5.4) in the objective portion of this policy. Therefore the objectives of Environment policy of Bangladesh need to be reviewed as it does not address all the necessary concern issues.

6.4 Mentioned Principles of the policy

In the environmental policy of Bangladesh no principle is identified and mentioned.

Principles of the environment policy should provide broad guideline to formulate strategies to achieve the targeted objectives. Principles are common guideline for every part and section of the policy. But there are no specific principles mentioned in the environment policy of Bangladesh (see 5.5). It is necessary to review the principles of this policy. Principles of the policy transmits the message about the core

consideration of this policy that need to be addressed. Principles of environment policy should cover how important the environmental consideration is, what policy instruments will be used, how integration will be made, who will be the main actor, what are the core consideration, etc.

As a environment policy following principles can be identified

1. Sustainable use of natural resources
2. Integrated decision making
3. Active participation in the environmental community and all sectors
4. Decentralization

According to the environment policy of India and Malaysia following principles could be incorporated in the Environment policy of Bangladesh

1. Conservation of nature's vitality and diversity
    i. The Precautionary Approach
    ii. Preventive Action

Both precautionary and preventive approach is needed to handle the pollution and degradation of the environment.

2. Continuous improvement in the quality of the environment

There is no upper limit of the quality of the environment. At the same time it is not possible to stop pollution totally. Therefore it is needed to adopt the approach of continuous improvement in the quality of the environment.

3. Commitment and accountability

Without having commitment to enhance the quality of the environment, no such positive initiatives will be taken. On the other hand commitment is not enough to ensure the desire outcome. Therefore accountability of the environment related activities should be ensured.

4. Economic Efficiency
    i. Polluter Pays
    ii. Cost Minimization
    iii. Entities with "Incomparable" Values
    iv. Equity

Command and control mechanisms are not enough to ensure the desired environment compliance. Therefore economic tools should be introduced to ensure environment compliance.

5. Legal Liability
    i. Fault Based Liability
    ii. Strict Liability

For a developing traditional society command and control is the unavoidable mechanism to ensure environment compliance.

6. Environmental Standard Setting

To prevent the pollution and degradation it is necessary to set some standard so that pollution and degradation can be measured and can be controlled on the basis of that standard.

As Bangladesh is an agro based developing country which is giving more emphasis in industrialization for economic development, it should keep and enhance the productivity of the environment, as most of the people are directly or indirectly

dependent on agriculture, and should maintain a balance relation between economic development and protection of environment. Principles of the policy should cover the option of balancing the economic development with the protection of environment. Moreover it is now recognized that no one sector is fully capable enough to handle the environmental issues rather it is needed to ensure active participation of all sectors. To adopt the changing pattern of degradation, pollution and technology it is needed to review the environment policy frequently. All sorts of socio-economic activities are related with environment. Therefore it would be better to integrate the environmental issues in all socio-economic activities and plans. As Environmental issues differ from place to place, it is wise that environment policy should be flexible and should have provision to adopt locality based plans and activities which can be activated through decentralization. Due to huge transaction cost it is difficult to achieve the targeted success of an environment policy through only command and control mechanism, legal frame work. Therefore it is wise to introduce a mix mechanism of legal frame work and economic instruments. In most cases it is not possible to bring the previous condition once the environment is polluted and degraded. For that reason environment policy incorporated the provision of precaution and prevention approach. To ensure accountability in the environment sector, standard should be set and people's participation should be included. Therefore it is found that some important tools and issues are not pointed in the 'Principle' portion of this policy.

6.5 Addressed Broad Heads

In the environment policy of Bangladesh no such 'strategies' is mentioned (see 5.6). Strategies of a policy are the prescribed and identified tools / mechanisms through which objectives of that policy expected to be achieved.

6.5A This policy attempts to address environmental degradation and pollution by providing guideline to the sectors which are responsible for this degradation and pollution. Environment policy of Bangladesh identified fifteen through which environment concern issues will be identified and addressed. These are 1) Agriculture 2) Industry 3) Health and Sanitation 4) Energy and Fuel 5) Water Development, Flood Control and Irrigation 6) Land 7) Forest, Wildlife and Bio-diversity 8) Fisheries and Livestock 9) Food 10) Coastal and Marine Environment 11) Transport and Communication 12) Housing and Urbanization 13) Population 14) Education and Public awareness 15) Science, Technology and Research.

Environmental policy of Bangladesh addresses many issues but a lot of important issues are not at all addressed in these policies which are very much related with the environmental regulation and which should be address in this policy. Some of those issues are

1. Proactive approach to regional and global environmental issues
2. enhancing the administrative capacity
3. Substantive Reforms
    - Living Modified Organisms (LMOs)
    - Environmentally Sensitive Zones
    - Monitoring of Compliance
    - Use of Economic Principles in Environmental Decision-making

4. Enhancing and Conserving Environmental Resources
    - Mountain Ecosystems
    - Pollution Abatement
        - Soil Pollution
        - Noise Pollution
    - Conservation of Manmade Heritage
    - Climate Change
5. Environmental Standards, Management Systems, Certification, and Indicators
6. Environmental Management Systems, Ecolabeling and Certification
7. Clean Technologies and Innovation
8. Partnerships and Stakeholder Involvement
9. Capacity Building
10. International Cooperation
11. Review of the Policy and other legal institutions
12. Review of Implementation
13. Process of Formulation of this Policy
14. Establishing and modernizing concern institutions

6.6 Addressing each Broad Heads

Environment policy usually provides necessary guideline and directives for other policies and concern activities to address relevant environmental issues according to the prescription. An effective environment policy has to address all concern sectors to achieve its ultimate goal. Some output and process are mentioned in every environment policy to achieve its outcome.

For each of the sectors, which are addressed in this policy, some goals and targets are identified. Then the necessary action plan to achieve these goals and targets are also mentioned. By comparing the approach mentioned in Environment Policy of Malaysia and Environment Policy of India, it is found that some important directives are not addressed or properly addressed in this policy (see 5.7 to 5.25).

6.6A Environment policy of Bangladesh does not provide some necessary guideline for agriculture sector; such as social pricing of harmful inputs which consider the social damage, Dr. Sankar, U. (1998), necessity to promote indigenous knowledge which environment friendly, promotion of organic farming of traditional crop varieties and so on (see 5.7).

Some relevant issues of industrial sectors to ensure environment protection are not covered (see 5.8) in the Environment Policy of Bangladesh. As Bangladesh has to balance between economic development and environment protection so it is necessary to introduce corrective, preventive and precautionary measures, and control at source of major pollutants for industrial sector. Reality and necessity of different industries is different; therefore each industry should have its own approach and policy to address environment. Partnership and collaboration of various sectors to ensure network of capacities for the burning necessity to protect environment need to be addressed in the Environment Policy of Bangladesh.

Some issues of health sector are not addressed in this policy. Such as human role in sustainable development, sewerage system, solid waste management system, impact of climate change on human health of health sector are not given emphasis in this national policy (see 5.9).

Natural resources like minerals are the asset of both present and future generation. Therefore intra-generational equity and inter-generational equity should be addressed in environment policy. But these issues are not addressed by the environment policy of Bangladesh (see 5.10).

In case of the guidance for Water development, Flood Control and Irrigation some major issues are not covered (see 5.11). Issues like Long term national plan for water management shall be prepared through systematic and comprehensive inventory of existing and potential water resources, river basin management and so on are not covered in this policy. At the same time this section should address fresh water, river management and water pollution separately and extensively.

There should have some guideline, which are not included (see 5.13), in this policy to encourage agro-forestry, legal recognition of the traditional entitlements of forest dependant communities, Implementation of multi-stakeholder partnerships with clearly defined obligations and entitlements for each partner, following good governance principles, public investments on enhancing the density of natural forests, mangroves conservation, plantation of only such species which are conducive to the conservation and sustainability of given ecosystems.

Though Jung, M. (2005) refers that Bangladesh has some level of capacity to address environment related issues like Clean Development Mechanism (CDM). But according to BCAS, 2001 in Amin, M. R. (2005) this capacity is very low. Therefore this weakness should be mitigated by effective guidance of this policy. Issues like man power training, enhancement of environment management capacity, inclusion of environmental issues in formal and informal education and so on are not covered in this policy (see 5.20).

BCAS, 2001 in Amin, M. R. (2005) refers that Bangladesh has weak legal framework (see 3.2P) and institutional arrangement (see 5.22) to handle and to address environmental issues. This statement indicates that Environment Policy of Bangladesh failed to address those issues effectively and efficiently. Aminuzzaman, S. M (2010) indicates that there are some inconsistencies among various environment related laws of Bangladesh. He also mentions that some issues are not properly specified in this policy.

6.7 Adopted Environmental Instruments

Environment Policy of Bangladesh adopts only command and control mechanism to implement its guidance. It does not adopt monetary tool, fiscal tool, market-based mechanism and so on to make the implementation effective and efficient.

6.8 Findings

1. There should be an official English version of the Environment Policy of Bangladesh (see 6.2).

2. Some major points / goals are missing in the ‘Objective’ of this policy (see 6.3).
3. Principles that are mentioned need to be reviewed (see 6.4).
4. Environment Policy of Bangladesh missed some of the major sectoral issues (Broad Head) which should be addressed to protect environment from pollution and degradation (see 6.6).
5. Guidelines that are provided for each sector (Broad Heads) are not enough to address technical issue like environment pollution (see 6.6).

6.9 Therefore it seems that Environment Policy of Bangladesh should be reviewed (see 6.8).

6.10 Conclusion

It is found that some of the major issues are not addressed in the Environment Policy of Bangladesh. On the other hand issues those are addressed are not adequately attended. Moreover modern environmental tools are not prescribed in this policy. Therefore it is apparent that Environment Policy of Bangladesh should be reviewed. Conclusion of this essay will be mentioned in the next chapter.

Chapter Seven : Conclusion

Bangladesh has the intension to grab both economic development and mitigate climate change through global cooperation. International initiative has been introduced to support developing country to address environmental issue in support of sustainable development. Now it is time to investigate the Bangladesh effort and initiative as well as capacity to participate and to anticipate that global initiative and to promote domestic initiatives. Global Report on Reducing Disaster Risk, UNDP (2004) identified Bangladesh as the most vulnerable country of the world considering tropical cyclone MoEF (2008). Due to these natural disasters Bangladesh's economic growth and activities hampered. Even it is said that impact of climate change is the 'most pressing development concern', ADB (2009), of Bangladesh. On the other hand, significant costing has to be paid by Bangladesh due to these environmental challenges. MoEF (2008) refers that on average 0.5% to 1% of the national GDP was the direct annual cost of natural disaster for last 10 years. ADB (2009) refers that natural disasters and vulnerabilities are creating significant barrier to the Bangladesh's effort to achieve MDG.

Bangladesh is keen to promote economic activities that ensure the protection of the environment. Economic strength of a developing country like Bangladesh is not enough to promote both sustainable development and protection of the environment. Therefore some global support is needed for Bangladesh. On the other hand, Bangladesh has always been involved itself into domestic and international initiatives to address environmental issues.

Teri (2002) refers the broad principles that guide the notion of Governmental policy of Bangladesh to face the challenge of environmental issue are:

1. Developed country should take the primary responsibility regarding emission reduction.
2. Developing countries which are vulnerable to the consequence of climate change should provide equal emphasis on both need for economic progress and need for adaptation to the adverse effects of Climate Change.
3. Developed world will take initiative for technology transfer and additional fund to encourage developing world to participate on global effort of emission reduction.

7.2 It is a challenge for Bangladesh to design and implement an environmental, policy which can address both economic progress and environment protection. On the other hand, frequent incidence of disaster added new dimension to the necessity of having effective environment policy to protection environment. Most of the researchers think that environment is rapidly degraded in Bangladesh. It is needed to examine whether the Environment Policy of Bangladesh, 1992 is capable to ensure the environment protection. If the Environment policy is not capable to protect the environment then it should be revierwed. Therefore main research question is

Should The Environment Policy of Bangladesh be reviewed? (see 1.4A)

This main research question will be addressed by addressing three sub-research (see 1.4B)

1. Does this policy address all major issues?
2. Are those issues properly addressed?
3. Does this policy adopt all available modern environmental tools?

Basically content analysis will be the mechanism to investigate necessary information to analyze the environment policy of Bangladesh by comparing it with the environment policy of Malaysia and India.

7.3 Environment policy should address all the major environment related issues and all these issues should be addressed properly. This research work examined how much the Environment Policy of Bangladesh addressed all the major concern issues properly will be examined by comparing this policy with similar policy of Malaysia and India.

7.4 Traditional environment policy basically adopts 'Command-and-Control' mechanism but a moder environment policy should adopt other menchanism such as charge systems; tradable permits; market friction reductions; and government subsidy reductions. This essay examined how much Environment Policy of Bangladesh adopts all these modern environmental instruments.

7.5 Environment policy of Bangladesh addressed 15 sectors to address overall environmental issues. These sectors are 1) Agriculture 2) Industry 3) Health and Sanitation 4) Energy and Fuel 5) Water Development, Flood Control and Irrigation 6) Land 7) Forest, Wildlife and Bio-diversity 8) Fisheries and Livestock 9) Food 10) Coastal and Marine Environment 11) Transport and Communication 12) Housing and Urbanization 13) Population 14) Education and Public awareness 15) Science, Technology and Research (see 4.4A).

It is found that following major issues are not addressed in the Environment Policy of Bangladesh (see 6.4).

1. Proactive approach to regional and global environmental issues
2. enhancing the administrative capacity
3. Substantive Reforms
    - Living Modified Organisms (LMOs)
    - Environmentally Sensitive Zones
    - Monitoring of Compliance
    - Use of Economic Principles in Environmental Decision-making
4. Enhancing and Conserving Environmental Resources
    - Mountain Ecosystems
    - Pollution Abatement
        - Soil Pollution
        - Noise Pollution
    - Conservation of Manmade Heritage
    - Climate Change
5. Environmental Standards, Management Systems, Certification, and Indicators
6. Environmental Management Systems, Ecolabeling and Certification
7. Clean Technologies and Innovation
8. Partnerships and Stakeholder Involvement

9. Capacity Building
10. International Cooperation
11. Review of the Policy and other legal institutions
12. Review of Implementation
13. Process of Formulation of this Policy
14. Establishing and modernizing concern institutions

7.6 On the other hand it is found that major issues which are addressed in this policy are not properly addressed (see 6.4). Moreover issues like implementation, formulation, revision of this policy is not addressed in this Policy.

7.7 Environment Policy of Bangladesh adopts only command and control mechanism to implement its guidance. It does not adopt monetary tool, fiscal tool, market-based mechanism and so on to make the implementation effective and efficient.

7.8 Environment Policy of Bangladesh, 1992 should be reviewed (see 6.8 and 6.9) because this policy does not cover all the major concern issues. At the same time, issues which are addressed in this policy should be addressed more adequately. Moreover, there should be an official English version of this policy which will indicate the positive intention of Bangladesh to participate and anticipate global environmental cooperation.

7.9 Lesson Learned

Environment is a complicated and cross-sectoral issue. It is not possible for an Environment Policy to ensure environmental protection for a long time. Therefore it is needed to review an Environment Policy very frequently to anticipate latest environmental instruments and global initiatives.

7.10 Further Research

Degradation of environment indicates the ineffectiveness of either concern policy or its proper implementation. It is found that Environment Policy of Bangladesh, 1992 should be reviewed to make it more effective. But still there is scope to research on the effectiveness of the implementation institutions. Department of Environment of Bangladesh has very few numbers of employees which is very insignificant to address issue like environment protection. Therefore, it can be examined that whether any present institute, which has access to every corner of the country and which has huge manpower with some administrative and judicial experience, should be assigned to ensure the effective implementation of this policy.

Refference

ADB (2004). Country Environmental Analysis: Bangladesh. Available from: http://www.adb.org/Documents/CEAs/BAN/BAN-CEA-Jul2004.pdf [Accessed 24th December 2009].

ADB (2009). People's Republic of Bangladesh: Supporting Implementation of the Bangladesh Climate Change Strategy and Action Plan. Available from: http://www.adb.org/Documents/TARs/BAN/42478-BAN-TAR.pdf [Accessed 13th June 2009].

Amin. M. R. (2005). Technology Transfer for Sustainable Development through Clean Development Mechanism (CDM): The Bangladesh Perspective. Available from: http://researchrepository.murdoch.edu.au/vital/access/service s/Download /wmdu:13/ DS2?view=true [Accessed 22th May 2009].

Aminuzzaman, S. M. (2010). Environment Policy of Bangladesh: A Case Study of an Ambitious Policy with Implementation Snag. Available from: http://www.monash.edu.au/research/sustainability-institute/asia-projects/paper_salahuddin_aminuzzaman.pdf [Accessed 24th December 2010]

BBS. 1999. Statistical Year Book of Bangladesh. Bangladesh Bureau of Statistics, Dhaka.

BBS. 2000a. Statistical Year Book of Bangladesh. Bangladesh Bureau of Statistics, Dhaka.

CPD (2001). Election 2001 : National Policy Forum.

Desai, U. (1998). Eecological policy and politics in developing country. Available from http://www.springerlink.com/content/h62133v5453m45p4/ [Accessed 02th May 2009].

Dr. Sankar, U. (1998).ENVIRONMENTAL EXTERNALITIES.

Dr. Nishat, A. (2007). Policy and Legal Premise for Environment and Natural Resources Management in Bangladesh: Issues concerns trends and institutional Framework. [online]. Available from: http://www.undp.org.bd/library/policypapers/Policy%20Dialogue%20Series%2011.pdf [Accessed 15th August 2010].

Hassan 2003 Eco-Degradation and Rural Livelihood Relationship. The Bangladesh Observer, August 10, 2003

Huq, N. (2008). Bangladesh and Climate Change: Need for a Comprehensive Adaptive Strategy. [online]. Available from: http://centad.org/climate_change/Climate%20Brief%20-%203.pdf [Accessed 05th June 2009].

Huq, S.; Rahman, A. A. and Mallick, D. (1998). Population And Environment In Bangladesh. Available from: http://www.eldis.org/fulltext/bcaspop.pdf [Accessed 10th August 2010].

Islam, M. F., Shammin, Junaid, J. 2001. Industrial pollution. In Nishat, A. Ullah, M., Haque, A. K. E (eds.) *Bangladesh environmental outlook*. Centre for Sustainable Development. Dhaka, Bangladesh.

IUCN 2000a. *Redbook of threatened animals of Bangladesh*. IUCN Bangladesh. Dhaka, Bangladesh.

IUCN. 2000b. Inception Report. Judicial and Administrative Arrangement for Management of Protected Areas and Prosecution of Environmental Offences. IUCNBangladesh, Dhaka, Bangladesh.

IUCN. 2003. *Strategy for adaptation: coping with climate change and climate variability in Bangladesh*. IUCN Bangladesh. Dhaka, Bangladesh. (to be published)

Jung, M. (2005). Host country attractiveness for CDM non-sink projects. HWWA DISCUSSION PAPER 312. [online]. Available from: http://opus.zbw-kiel.de/volltexte/2005/3190/pdf/312.pdf [Accessed 05th June 2009].

Karim, Z., Mia, M. M. U. and Razia, S. 1994. Fertilizer in the national economy and sustainable environmental development. Asia pacific Journal Environment and Development, 1 (2):48-67.

Karim. Z. and Iqbal, A. (eds.) 2001. Impact of land degradation in Bangladesh-Changing
scenario in agricultural land use. Bangladesh Agricultural Research Council. Dhaka.

Khan, M.H. 2001 Biodiversity. In Nishat, A. Ullah, M., Haque, A. K. E (eds.) *Bangladesh environmental outlook*. Centre for Sustainable Development. Dhaka, Bangladesh.

Khan, Mizan R. (1998) “Managing Sustainable Development: A case Study of the Forest Sector of Bangladesh,” Theoretical Perspectives 4&5.

Khalequzzaman, Md., (1999). Environmental philosophy in the context of Bangladesh. Weekly Holiday, Dhaka, July 30 issue.

Kashem, M. A.; Rahman, M. Z. and Mikuni, H. (1997). Combating Environmental Degradation in Bangladesh: New Urge for Susrainable Agriculture Technologies. Available from: http://rms2.agsearch.agropedia.affrc.go.jp/contents/JASI/pdf/academy/57-0601.pdf [Accessed 10th August 2010].

Lonergan, S.(). The Role of Environmental Degradation in Population Displacement. Available from: http://www.wilsoncenter.org/topics/pubs/report4b.pdf. [Accessed 12th May 2009].

Millat-e-Mustafa, M. (2002). A Review of Forest Policy Trends in Bangladesh. Available from: http://enviroscope.iges.or.jp/modules/envirolib/upload/371/attach/08_Bangladesh.pdf [Accessed 12th May 2009].

MoEF, (2008). Bangladesh Climate Change Strategy and Action Plan 2008. Ministry of Environment and Forests, Government of the People's Republic of Bangladesh, Dhaka, Bangladesh.

MPO. 1990. National Water Plan-Phase II Draft Final Report.

MPO.1987. Openwater Capture fishery resources. Tech. report 16.

Pagiola, S. (1995). Environmental and Natural Resource Degradation in Intensive Agriculture in Bangladesh. Available from: http://129.3.20.41/eps/othr/papers/0405/0405008.pdf. [Accessed 22th May 2009].

Rashid, H. 1991. *Geography of Bangladesh*. UPL, Dhaka.

Salnykov, M. and Zelenyu, V. (1999). Estimation of Environmental Efficiencies and Shadow Prices of Pollutants: A Cross-Country Approach. [online]. Available from: http://economics.ca/2006/papers/0434.pdf [Accessed 20th August 2010].

Shahid, S. M. 1994. *Data collection and analysis of land degradation. Bangladesh report.* Bangkok. Rapa publication.

Stavins, R. N. (2002). Experience with Market-Based Environmental Policy Instruments. Available from: http://enviroscope.iges.or.jp/modules/envirolib/upload/371/attach/08_Bangladesh.pdf. [Accessed 22th May 2009].

TERI (2002). Clean Development Mechanism Project Opportunities in Bangladesh. Available from: http://pubs.pembina.org/reports/cdm_bangladesh _app_new.pdf [Accessed 12th May 2009].

WCED.1987. *Our common future.* World Commission on Environment and Development, Oxford University Press, India.

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Table of Contents

ABBREVIATIONS

ADB	Asian Development Bank
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoB	Government of Bangladesh
IGES	Institute for Global Environmental Strategies
LDC	Least Developed Country
MoEF	Ministry of Environment and Forests
NEMAP	National Environment Management Action Plan
NEP	National Environment Policy
PRSP	Poverty Reduction Strategy Paper
TERI	The Energy and Resources Institute
UNDP	United Nations Development Programme

Country Profile of Bangladesh

Bangladesh is a South Asian country which became independent in 1971. This is a very small country with a land area of 147,570 km2, but it is the most densely populated, (834 people/km2 in 2001), country of the world, Uddin, S. N. and Taplin, R. (2006). At the same time it has very low per capita income, GNI per capita of US$ 470 in 2005, with tremendous poverty, Uddin, S. N. and Taplin, R. (2006). On the other hand, within 38 years of its independence, Bangladesh made significant progress in various socio-economic areas. MoEF (2008) refers that Bangladesh made remarkable achievement in population growth reduction, enhancing the food production, poverty reduction, child mortality reduction, increasing girls' enrolment in primary school and so on. In Human Development Index the position of Bangladesh significantly from 0.347 in 1975 to 0.547 in 2005; at the same time economic growth of the country is also remarkable, over 6%, Between 1991 and 2005, MoEF (2008). Therefore by facing the challenge of huge population, Bangladesh has made some progress in some socio-economic areas.

The three major rivers, the Padma, the Meghna and the Brahmaputra, and about 700 other rivers, distributaries, streams and canals totalled an enormous length of waterareas (ADB, 2004). Rashid (1991) estimated the area to be about 24,000 km. Beels, baors, haors1, rivers and canals, floodplains, estuaries etc made up this vast network of wetlands which provide a huge refuge for wildlife, fish and other aquatic lives.

According to ADB (2204) The forests of Bangladesh can broadly be classified as: (i) Tropical evergreen or semi-evergreen forest in the eastern districts of Chittagong, Cox's Bazar, Sylhet, and the Chittagong Hill Tracts region collectively known as Hill forest; (ii) Moist or dry deciduous forest also known as Sal (Shorea robusta) forest located mainly in central plains and the freshwater areas in the northeast region; and (iii) Tidal mangrove forests along the coast, the Sundarbans in the southwest of the Khulna and other mangroves in the Chittagong and Noakhali coastal belt.

ABSTRACT

It is a challenge for Bangladesh to design and implement an environmental, policy which can address both economic progress and environment protection. An effective and efficient environment policy is needed for Bangladesh to guide and to control every initiative for its sustainability and environment protection.

Most of the research works, which addressed the environment of Bangladesh, transmit a common message; that is rapid environmental degradation is taking place in Bangladesh. This message creates the scope for my research work. As degradation is a continuous phenomenon in Bangladesh, it is argued that the Legal Framework, Institutional Framework and Policy Framework of Bangladesh must be appropriate and effective to address this environmental degradation. Bangladesh has an Environment Policy to guide all sectors and other policies to address environmental issues with a common goal of ensuring environmental sustainability. Therefore in my research I would like to examine whether the existing Environment Policy of Bangladesh reflects all the concern issues effectively. This research question will be addressed through addressing three sub-questions; 1. Does this policy that was adopted in 1992 address all major issues? 2. What are the gaps which need to be addressed? 3. Does this policy have appropriate environmental tools?

Sub-question one and two is addressed by comparing the Environment policy of Bangladesh with the Environment Policy of Malaysia and India. Policies of these two countries have been selected for comparison and analysis, as they are viewed as comprehensive in nature.

Environment Policy of Bangladesh was adopted in 1992; now it is argued that it presents good scope for a critical review because this policy may not cover all the major issues. At the same time, issues which are addressed in this policy may need to be addressed more adequately. Moreover, there should be an official English version of this policy, which is required for Bangladesh to participate in global environmental cooperation.

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cwi‡e‡ki c‡k evsjv‡`k miKvi g‡b K‡i †h t-

1.1 AvšRwZK I AvÂwjK †c¶vc‡U cwi‡ek `lY I Ae¶‡qi mwnZ evsjv‡`‡ki cKwZ, cwi‡ek I m¤ú‡`i wfwË mivmwifv‡e m¤úwKZ weavq GB wel‡q mgwšZ mZKZv I c‡qvRbxq Kvhµg MnY Kiv Avek¨K|

1.2 evsjv‡`‡ki Ae¯vb, cwi‡e‡ki Ae¶q I µgvebœZ Ges m¤ú` e¨envi‡i jvMmB chw³, †UKmB c×wZ I cwµqvi Afve GKwU mgwšZ I AMwaKvi wfwËK cwi‡ek bxwZ Mn‡Yi welqwU‡K Acwinvh Kwiqv Zwjqv‡Q|

1.3 cwi‡ek msi¶Y I Dbqb wbwðZ Kivi j‡¶¨ mKj cKvi RvZxq m¤ú‡`i mô e¨envi K‡í me¯‡ii RbMY‡K m¤ú³ Kiv Avek¨K| e¨vcK MYm‡PZbZv mwói gva¨‡gB Bnv wbwðZ Kiv hvq|

1.4 †`‡ki cvKwZK `‡hvMRwbZ mgm¨w`i Zvr¶wYK I `xN‡gqv`x mgvavbK‡í GB welqwU‡K †`‡ki mweK cwi‡ek msi¶Y I Dbqb Ges m¤ú` e¨e¯vcbvi AwefvR¨ Ask wnmv‡e we‡ePbv Kiv c‡qvRb|

1.5 †`‡ki ¯vbxq I RvZxq chv‡q c‡qvRbxq Kvhµg MnY Ges mswkó welq AvÂwjK I AvšRwZK mn‡hwMZvi gva¨‡g †`k Z_v weke¨vcx cwi‡ek Dbqb I m¤ú‡`i cwi‡ek m¤§Z e¨envi wbwðZ Kiv m¤e I Avek¨K|

2| D‡Ïk¨t

cwi‡ek bxwZi D‡Ïk¨mgn wbæi¡c t

2.1 cwi‡ek msi¶Y I Dbq‡bi gva¨‡g †`‡ki cvKwZK fvimvg¨ msi¶Y I mwPeK Dbqb|

2.2 †`k‡K cvKwZK `‡hvM nB‡Z i¶v|

2.3 mKj cKvi `lY I Ae¶qgjK KgKvÛ mbv³ KiY I wbqšY|

2.4 mKj †¶‡Î cwi‡ek m¤§Z Dbqb wbwðZKiY|

2.5 mKj RvZxq m¤úª`i †UKmB, `xN‡gqv`x I cwi‡ek m¤§Z e¨envi‡ii wbðqZv weavb|

2.6 cwi‡ek msµvš mKj AvšRwZK D‡`¨v‡Mi mwnZ h_vm¤e mwµqfv‡e RwoZ _vKv|

3| bxwZgvjv t

cwi‡ek msµvš Kvhµg †`‡ki mKj AÂj Ges Dbqb †m±‡i we¯Z| ZvB cwi‡ek bxwZi mwPeK j¶¨mgn AR‡b GB bxwZgvjv 15wU Lv‡Z wb‡æ ewYZ nBj t

3.1 Kwl t

3.1.1 Kwl Dbqb I Lv‡`¨ ¯qsm¤úYZv AR‡bi j‡¶¨ MnxZ mKj c‡Póv I chw³ cwi‡ek m¤§ZKiY|

3.1.2 Dbqb KgKv‡Û mKj Kwl m¤úª`i wfwË msi¶Y Ges Dnv‡`i cwi‡ek m¤§Z I `xN‡gqv`x e¨envi‡ii wbðqZv weavb|

3.1.3 Kwl †¶‡Î †h mKj ivmvqwbK I KwÎg DcKiY I Dcv`vb fwgi DeiZv I ^Re¸Y webó Kivmn gvbl I Ab¨vb¨ cvYxi Dci ¶wZKi cfve †dwjqv _v‡K Dnv‡`i e¨envi wbqšY Ges D³ DcKiYmgn e¨envi Kv‡j Kwl kwg‡Ki wbivcËvgjK e¨e¯v Mn‡Yi weavb Kiv| †mB mv‡_ wewfb cKvi cvKwZK mvi I KxU bvk‡Ki e¨envi Drmvwn KiY|

3.1.4 Kwl †¶‡Î Drcv`b e¨e¯vcbv I Drcv`b m¤úª‡Ki †¶‡Î cwi‡ek msi¶Y, Dbqb I m¤úª`i †UKmB e¨env‡ii j‡¶¨ GB †¶‡Î c‡qvRbxq cwieZ‡bi gva¨‡g cwi‡ek m¤§Z Dbq‡b mnvqZv c`vb|

3.1.5 cwi‡ekm¤§Z cvKwZK Zš h_v cvU I cvURvZ `e¨w`i e¨envi ew×KiY|

3.2 wkí t

3.2.1 wkí cwZôvbmgn KZK cwi‡ek `l‡Yi e¨vcv‡i chvqµ‡g ms‡kvabgjK e¨e¯v MnY|

3.2.2 miKvix I †emiKvix mKj †¶‡Î bZb wkí ¯'vc‡bi c‡e cwi‡ekMZ cwZwµqv wbi‡c†bi (BAvBG)e¨e¯'v KiY|

3.2.3 cwi‡ek `lY K‡i Ggb cY¨ Drcv`bKvix wkí ¯'vcb wbwl×KiY, ¯'wcZ wkímgn chvqµ‡g eÜKiY Ges GB mg¯' wkí cwZôvb KZK Drcw`Z c‡Y¨i cwi‡ekm¤§Z weKí cY¨ D™veb/cPj‡bi gva¨‡g H mKj c‡Y¨i e¨envi wbi“rmwnZKiY|

3.2.4 wkí †¶‡Î cwi‡ekm¤§Z I jvMmB chw³ D™veb Ges GZ`msµvš M‡elYv I m¤úmviY Kvhµg Drmwn ZKiY Ges Abi‡c Kvhµg‡K k‡gi m‡evrKó e¨envi I b¨vqmsMZ gj¨ c`v‡bi mwnZ mvgÄm¨cYKiY|

3.2.5 wk‡í KvPvgv‡ji AcPq‡iva I †UKmB e¨envi wbwðZKiY|

3.3 ¯'v¯'¨ I ¯'v¯'¨weavb t

3.3.1 †`‡ki mKj †¶‡Î I mKj Dbqb KgKv‡Û Rb¯'v‡¯'¨i cwZ ¶wZKviK KgKvÛ cwZ‡ivaKiY|

3.3.2 †`‡ki ¯'v¯'¨bxwZ‡Z cwi‡ek msµvš wPšvfvebv m¤ú³KiY|

3.3.3 ¯'v¯'¨ wk¶v e¨e¯'vq cwi‡ek welqK KwiKjvg Ašf³KiY|

3.3.4 kni I cjx GjvKvq ¯'v¯'¨ m¤§Z cwi‡ek Mwoqv †Zvjv|

3.3.5 kwgK‡`i Kg¯'j ¯'v¯'¨ m¤§Z ivLvi e¨e¯'vKiY|

3.4 Rvjvbx t

3.4.1 †h mKj Rvjvbx cwi‡ek `lY K‡i †mB¸wji e¨envi nvm I wbi“rmwnZKiY Ges cwi‡ek m¤§Z Kg ¶wZKviK Rvjvbx e¨envi ew×KiY|

3.4.2 Rvjvbx wnmv‡e KvV, Kwl eR¨ BZ¨w`i e¨envi nvm I weKí Rvjvbx e¨envi ew×KiY|

3.4.3 AvYweK kw³i e¨env‡i wei‡c cwi‡ekMZ cwZwµqv m¤ú‡K h_vh_ mZKZv MnY Ges mKj cKvi AvYweK `lY I †ZRw¯'‡q wewKiY †iv‡a e¨e¯'v MnY|

3.4.4 Rvjvbx mvk‡qi Rb¨ DbZ ai‡bi chw³ D™veb, e¨envi I Dnvi `“Z m¤úmviY|

3.4.5 †`‡ki gIR` I bevqb‡hvM¨ Rvjvbx msi¶Y|

3.4.6 Rvjvbx I LwbR m¤ú` AvniY msµvš cKí Mn‡Yi c‡e cwi‡ekMZ cfve wbi“c‡Yi e¨e¯'v KiY|

3.5 cwb Dbqb, eb¨v wbqšY I †mP t

3.5.1 †`‡ki mKj cwb m¤ú‡`i cwi‡ekm¤§Z e¨envi wbwðZKiY|

3.5.2 cwb m¤ú` DbqbK‡í MnxZ e¨e¯w` I †mP †bUIqvK hvnv‡Z cwi‡e‡k wei¡c cwZwµqv mwó bv K‡i Zvnv wbwðZKiY|

3.5.3 eb¨v wbqš‡Yi D‡Ï‡k¨ eva wbgvY, b`x I Lvj Lbb cfwZ MnxZ e¨e¯w` hvnv‡Z ¯vbxq, AvÂwjK I RvZxq chv‡q cwi‡ekm¤§Z nq Zvnvi wbðqZv weavb|

3.5.4 cwb m¤ú` I eb¨v wbqšY †¶‡Î BwZg‡a¨ MnxZ e¨e¯w`i cwi‡ekMZ wei¡c cwZwµqv `ixKiY|

3.5.5 †`‡ki nvIi, evIi, wej, wSj, b`x cfwZ mKj Rjvkq I cwb m¤ú`‡K `lYg³ ivLv|

3.5.6 fMf¯ I fDcwi¯ cwbi e¨envi I e¨e¯vcbv weÁvbwfwËK †UKmB, `xN‡gqv`x I cwi‡ek m¤§ZKiY|

3.5.7 mKj cwb m¤ú` Dbqb I e¨e¯vcbv msµvš cKí Mn‡Yi Av‡M cwi‡ekMZ cfve wbi¡c‡Yi e¨e¯vKiY|

3.6 fwg t

3.6.1 fvimvg¨gjK cwi‡ekm¤§Z RvZxq fwg e¨envi bxwZ I cwiKíbv cYqb|

3.6.2 fwg¶q †iva, DeiZv msi¶Y I ew×, fwg cbi“×vi I bZb RwMqv DVv fwg msi¶Y I e¨e¯vcbv Kvhµg †Rvi`viKiY|

3.6.3 †`‡ki wewfb B‡Kv-wm‡ó‡gi (Eco-system) mwnZ msMwZcY fwg e¨envi c×wZ ceZ‡b Drmvn c`vb|

3.6.4 Rwgi jeYv³Zv I ¶viZvi cfve †ivaKiY|

3.7 eb, eb¨cvYx I Rxe‰ewPÎ t

3.7.1 †`‡ki cvKwZK cwi‡ekMZ fvimvg¨ I Av_-mvgwRK c‡qvRb I ev¯eZvi †cw¶‡Z c‡qvRbxq eb I e¶w` msi¶Y, m¤úmviY I Dbqb|

3.7.2 mKj mswkó Dbqb KgKv‡Û e¶‡ivcY KgmPx Ašf³KiY|

3.7.3 eb fwg I ebR m¤ú‡`i ms‡KvPb I ¶q‡iva eÜKiY|

3.7.4 ebR m¤ú‡`i weKí D™veb I Dnvi e¨env‡i Drmvn c`vb|

3.7.5 †`‡ki eb¨ cvYx I Rxe‰ewPÎ msi¶Y, mswkó †¶‡Î M‡elYv †Rvi`viKiY Ges GZ`msµvš Ávb I AwfÁZvi wewbg‡q mnvqZv c`vb|

3.7.6 †`‡ki Rjvfwg I AwZw_ cwLi msi¶Y I Dbqb|

3.8 grm¨ I cïm¤ú`t

3.8.1 grm¨ I cïm¤ú‡`i msi¶Y I Dbq‡bi Rb¨ Dch³ cwi‡ek wbwðZKiY|

3.8.2 grm¨ m¤ú‡`i Drm wnmv‡e wPwýZ Rjvfwg¸wji ms‡KvPb cwZ‡iva Ges ms¯‹vigjK e¨e¯'w` Mn‡Y Drmvn c`vb|

3.8.3 grm¨ I cïm¤ú` DbqbgjK c`‡¶cmgn hvnv‡Z g¨vb‡Mvf ebvÂj I Ab¨vb¨ B‡Kv-wm‡ó‡gi cwZ †Kvbiƒc weiƒc cwZwµqv mwó bv K‡i Zvnv wbwðZKiY|

3.8.4 grm¨ m¤ú‡`i ¶wZKviK cwb Dbqb, eb¨v wbqšY I †mP cK‡íi cbtgj¨vqb Ges cwi‡ek Dbqb ceK gvQ Pv‡li weKí e¨e¯'vKiY|

3.9 Lv`¨t

3.9.1 Lv`¨ Drcv`b, msi¶Y, cwµqvRvZKiY I e›Ub c×wZ ¯'v¯'¨ I cwi‡ek m¤§Zfv‡e wb¯úbnIqv wbwðZKiY|

3.9.2 webó Lv`¨`e¨ cwi‡ek m¤§Zfv‡e wb¯úwËKiY|

3.9.3 Rb¯'v¯'¨ I cwi‡e‡k weiƒc cwZwµqv mwó Kwi‡Z cv‡i GBiƒc Lv`¨`e¨ Avg`vbx wbwl×KiY|

3.10 DcKjxq I mvgw`K cwi‡ekt

3.10.1 †`‡ki DcKjxq I mvgw`K B‡Kv-wm‡óg (Eco-system) Ges m¤ú‡`i cwi‡ek m¤§Z msi¶Y I Dbqb wbwðZKiY|

3.10.2 DcKjxq I mvgw`K GjvKvq mKj cKvi Af¨šixY I ˆe‡`wkK `lYgjK KgKvÛ cwZ‡ivaKiY|

3.10.3 DcKjxq I mvgw`K cwi‡ek I m¤ú` msi¶Y I Dbq‡b c‡qvRbxq M‡elYv †Rvi`viKiY|

3.10.4 DcKj I mvgw`K AÂ‡j aZ gv‡Qi cwigvY m‡ev"P mnbkxj mxgvq ivLv|

3.11 †hvMv‡hvM I cwienbt

3.11.1 ¯'jc_, †ij, wegvb I Af¨šixY †bš-c_ e¨e¯'v hvnv‡Z †Kvbiƒc cwi‡ek `lY ev m¤ú‡`i Ae¶qgjK cwZwµqv mwó bv K‡i Zvnv wbwðZKiY Ges GB ai‡Yi cKí ev¯'evq‡bi Av‡M cwi‡ekMZ cfve wbiƒc‡bi e¨e¯'v MnY|

3.11.2 moK, †ij, wegvb I †bš-c‡_ PjvPjKvix hvbevnb Ges RbMY hvnv‡Z cwi‡ek `lYgjK KgKv‡Û wjß bv nq Zvnv wbwðZKiY Ges

Abi¡c hvbevnb cwiPvjbvq wb‡qwRZ kwgK‡`i ¯v¯¨ msi¶‡Yi e¨e¯v MnY|

3.11.3 Af¨šixY †bŠ-e›`i I WKBqvWmgn KZK cwb I ¯vbxq cwi‡ek `lYgjK Kvhµg wbqšY|

3.12 Mn I bMivqb t

3.12.1 Mnvqb I bMivqb msµvš mKj cwiKíbv Ges M‡elYvq cwi‡ekMZ wPšv m¤ú³ KiY|

3.12.2 kni I MvgvÂ‡j eZgvb AvewmK GjvKmg‡n chvqµ‡g cwi‡ek m¤§Z m‡hvM-mwea ` m¤úmviY|

3.12.3 ¯vbxq I mweK cwi‡e‡ki Dci wei¡c cwZwµqv mwóKvix Mnvqb I bMivqb wbqšY|

3.12.4 bMixi †mŠ›`h ea‡b Rjvk‡qi fwgKvi Dci ¸i“Z Av‡ivc|

3.13 RbmsL¨v t

3.13.1 Rbkw³ i mgwšZ, mcwiKwíZ I cwi‡ek m¤§Z e¨envi wbwðZKiY|

3.13.2 miKv‡ii RbmsL¨v bxwZ I KvhKjv‡c cwi‡ek msi¶Y I Dbqb-gjK wPšv m¤ú³ KiY|

3.13.3 DbqbgjK Kv‡R gwnjv‡`i fwgKv wbwðZKiY|

3.13.4 DbqbgjK Kv‡R †eKvi Rbkw³ i e¨envi Drmwn ZKiY|

3.14 wk¶v I MY-m‡PZbZv t

3.14.1 wk¶vi cmvi I †`‡ki mweK Dbq‡b RbMY‡K AwaKZi m¤ú³ Kivi j‡¶¨ wbi¶iZv `ixKiY Ges wk¶‡Zi nvi `“Z ew×i j‡¶¨ e¨e¯v MnY|

3.14.2 cwi‡ek msi¶Y I Dbqb, mKj RvZxq m¤ú‡`i †UKmB, `xN‡gqv`x Ges cwi‡ek m¤§Z e¨envi BZ¨w` wel‡q e¨vcK MY-m‡PZbZv mwóKiY|

3.14.3 cwZôvwbK Ges AcwZôvwbK mKj cKvi wk¶v e¨e¯v I gva¨‡g cwi‡ek msµvš Ávb I Z‡_¨i e¨vcK Ašf³ I cmvi wbwðZKiY|

3.14.4 cvmswMK mKj Kv‡R RbMY‡K ¯ZtùZ I mivmwi AskMn‡Y DØ×KiY|

3.14.5 miKvix †emiKvix KgKZv, KgPvix‡`i Ges wkí I ewYR¨ †¶‡Î wb‡qwRZ kwgK‡`i cwk¶Y KgmPx‡Z cwi‡ek welqw` Ašf³ KiY|

3.15 weÁvb, chw³ I M‡elYv t

3.15.1 RvZxq weÁvb I chw³ bxwZi AvIZvq cwi‡ek `lY Z`viK I wbqšbgjK e¨e¯v Ašf³KiY|

3.15.2 cwi‡ek msi¶Y I Dbq‡b mKj RvZxq m¤ú‡`i `xN‡gqv`x, †UKmB I cwi‡ekm¤§Z e¨envi wbwðZKi‡Yi j‡¶¨ c‡qvRbxq M‡elYv cwiPvjbv Ges chw³ D™veb Drmwn ZKiY|

3.15.3 RvZxq weÁvb I chw³ bxwZ (1986) Gi AvIZvq M‡elYv I Dbq‡bi Rb¨ AMwaKvi wnmv‡e wPwýZ †¶Îmg‡n cwi‡ekMZ we‡ePbv GKwU Acwinvh AsM wnmv‡e ms‡hvRb|

3.15.4 mKj M‡elYv I Dbqb cwZôv‡b Zvnv‡`i M‡elYv †¶Îmg‡ni cwi‡ekMZ w`K we‡ePbvi e¨e¯v ivLv|

4| AvBbMZ KvVv‡gv t

4.1 cwi‡ek I m¤ú` msi¶Y Ges `lY I Ae¶q wbqš‡Yi mwnZ m¤úwKZ mKj eZgvb AvBb mg‡qvc‡hvMx Kwiqv ms‡kvab|

4.2 cwi‡ek `lY I Ae¶qgjK KvhKjvc wbqš‡Yi Rb¨ c‡qvRbxq mKj †¶‡Î bZb AvBb cYqb|

4.3 cvmswMK mKj AvB‡bi weavbmgn h_vh_fv‡e cwZcvjb wbwðZKiY Ges GZ`m¤ú‡K e¨vcK MY-m‡PZbZv mwóKiY|

4.4 cwi‡ek msµvš †h mKj AvšRwZK AvBb/Kb‡fbkb/c‡UvKj evsjv‡`k KZK Ab‡gv`b‡hvM¨ Zvnv Ab‡gv`bKiY Ges H mKj AvBb/Kb‡fbkb/c‡UvK‡ji weavb Abhvqx evsjv‡`‡k cPwjZ AvB‡bi ms‡kvab/cwieZb mvab|

5| cwZôvbK KvVv‡gv t

5.1 cwi‡ek I eb gšYvjq GB bxwZ ev¯evq‡bi KvR mgšq Kwi‡e|

5.2 GB bxwZ ev¯evq‡bi Kv‡R mwweK w`K-wb‡`kbv c`v‡bi Rb¨ miKvi cav‡bi mfvcwZ‡Z GKwU RvZxq cwi‡ek KwgwU MVb|

5.3 fwel¨‡Z †`‡ki cwi‡ekMZ Ae¯v Ges Av_-mvgwRK I Ab¨vb¨ c‡qvR‡bi †cw¶‡Z GB bxwZ h_vh_fv‡e cwieZb I cwiea‡bi Rb¨ cwi‡ek I eb gšYvjq KZK mg‡qvPZ c`‡¶c MnY|

5.4 cwi‡ek Awa`ßi mKj B AvB G Gi Povš chv‡jvPbv I Ab‡gv`b c`vb Kwi‡e|

cwi‡ek msµvš ev¯evqb Kvh¨µg

RvZxq cwi‡ek bxwZi j¶¨ I D‡Ïk¨ ARb Ges wewfb MnxZ bxwZgvjv ev¯evq‡bi D‡Ï‡k¨ GKwU mwb`ó Kvh-cwiKíbv _vKv Acwinvh¨| wb‡æ GZ`msµvš Kvh-cwiKíbv LvZIqvix fv‡e mcwik Kiv nBj t

LvZ ev¯evqbKvix KZc¶

1| Kwl t

1.1 Kwl‡¶‡Î fwgi ˆRe¸Y ew× DeiZv msi¶Y I †UKmB Kwl c×wZ m¤úmvi‡Yi D‡Ï‡k¨ GKwU gvVwfwËK RvZxq chv‡qi mgx¶v cwiPvjbv Kwi‡Z nB‡e Ges Dnvi wfwË‡Z mswkó mKj †¶‡Î KvhKi c`‡¶c MnY Kwi‡Z nB‡e|

K| Kwl gšYvjq
L| evsjv‡`k Kwl M‡elYv KvDwÝj
M| Kwl m¤úmviY Awa`ßi
N| evsjv‡`k avb M‡elYv Bbwówu DU
O| cvU M‡elYv Bbwówu DU
P| ‡`k Kwl M‡elYv Bbwówu DU|
Q| gwËKv m¤ú` Dbqb Bbwówu DU
R| evsjv‡`k wPwb I Lv`¨ wkí K‡cv‡ikb|

1.2 ivmvqwbK evjvB I KxU bvk‡Ki (Chemical Insecticide and Pesticide) nB‡e| †h e¨envi wbqšY Kwi‡Z mKj evjvBbvkK ivmvqwbK `‡e¨i welv³Zv cwi‡e‡k `xNKvj weivRgvb _v‡K Ges µgvMZ cÄxfZ nq (†hgb-wWwWwU, †Kwi‡b‡UW nvB‡WvKveb mg× †hŠM) Zvnv‡`i Drcv`b, Avg`vbx I e¨envi ev¯e Ae¯v we‡ePbvceK µgvš‡q wbqšY Kwiqv hZ `“Z m¤e wbwl× †NvlYv Kwievi c`‡¶c MnY Kwi‡Z nB‡e| c¶vš‡i `“Z wefvR‡bi d‡j KvhKwiZv AwP‡iB webó nq GB ai‡bi ivmvqwbK `e¨vw` wbqwšZfv‡e e¨envi Kiv hvB‡e| cvKwZK evjvBbvkK e¨env‡ii Dci AwaK ¸i“Z Av‡ivc Kwi‡Z nB‡e Ges mgwšZ KxUbvkK e¨e¯vcbv Pvj Kwi‡Z nB‡e|

K| Kwl gšYvjq
L| ewYR¨ gšYvjq
M| wkí I mswkó Ab¨vb¨ gšYvjq
N| Kwl m¤úmviY Awa`ßi

	LvZ	ev¯ewqbKvix KZc¶	
1.3	ivmvqwbK mvi e¨envi h_vh_ I wbqwšZfv‡e Kwi‡Z nB‡e Ges ˆRe mvi e¨env‡ii Dci µgeagvb nv‡i ¸i“Z Av‡ivc Kwi‡Z nB‡e|	K| Kwl gšYvjq L| Kwl m¤úmviY Awa`ßi	
1.4	we‡`k nB‡Z †h †Kvb cKvi exR, Pviv I MvQcvjv Avg`vbxi †¶‡Î h_v_ †Kvqv‡i›UvBb e¨e¯vi gva¨‡g m¤ve¨ wei¡c cwZwµqv m¤ú‡K mZKZv Aej¤b Kwi‡Z nB‡e|	K| Kwl gšYvjq L| eb Awa`ßi M| ewYR¨ gšYvjq N| gL¨ Avg`vbx ißvbx wbqš‡Ki `ßi O| cv›U c‡UKkb DBs P| Kwl m¤úmviY Awa`ßi Q| evsjv‡`k wPwb I Lv`¨ wkí K‡cv‡ikb	
1.5	KxU-cZsM bv‡ki Rb¨ wewfb cvKwZK cwZ‡iva e¨e¯v †hgb e¨vO, gvQ, ¸Bmvc, mvc, K”Qc, eb¨cvYx BZ¨w`i msi¶Y, wbivcËv I cvKwZK cwi‡e‡k esk ew×i Rb¨ c‡qvRbxq e¨e¯v MnY Kwi‡Z nB‡e|	K| cwi‡ek I eb gšYvjq L| eb Awa`ßi M| grm¨ I cï m¤ú` gšYvjq N| ewYR¨ gšYvjq O| †Rjv ckvmKMY P| gL¨ Avg`vbx ißvbx wbqš‡Ki `ßi	
1.6	GjvKv wfwËK cwi‡ek Dc‡hvMx Ges ewaZ RbmsL¨v I RvZxq A_bxwZi Pwn`v Abhvqx Kwl e¨e¯v ceZb Ges AZ¨waK Pv‡ci m¤§Lxb Kwl kl¨ I Kwl c‡Y¨i weKí Pvjvi e¨e¯v MnY Kwi‡Z nB‡e|	K| Kwl gšYvjq L| Kwl m¤úmviY Awa`ßi	
1.7	KwÎg (wmb‡_wUK) Av‡ki e¨envi nv‡mi gva¨‡g cvKwZK Zš h_v cvU I cvURvZ `e¨w`i e¨envi ew× Kwi‡Z nB‡e		K| cvU gšYvjq L| wkí gšYvjq M| †mP, cwb Dbqb I eb¨v wbqšY gšYvjq

2| wkí t

2.1	cwi‡ek Awa`ßi KZK wPwýZ wkí cwZôvbmg‡n h_vkxN m¤e cwi‡ek	K| cwi‡ek I eb gšYvjq L| wkí gšYvjq M| Rvjvbx I LwbR m¤ú` gšYvjq	

	LvZ		ev¯evqbKvix KZc¶
	`lY wbqšYgjK e¨e¯v MnY Kwi‡Z nB‡e		N| evsjv‡`k imvqb wkí ms¯v O| evsjv‡`k B¯úvZ I c‡KŠkj ms¯v P| evsjv‡`k eb wkí ms¯v Q| evsjv‡`k ¶` I KwUi wkí ms¯v R| cvU gšYvjq S| evsjv‡`k cvUKj K‡cv‡ikb T| evsjv‡`k wPwb I Lv`¨ wkí K‡cv‡ikb U| wewb‡qvM †evW V| evsjv‡`k †c‡Uwjqvg K‡cv‡ikb W| evsjv‡`k we`¨r Dbqb †evW X| e¯ gšYvjq Y| e¯ cwi`ßi Z| ¯vbxq miKvi wefvM
2.2	cwZwôZ mKj `lY m¤vebvgq wk‡í cwi‡ek `lY wbqšYgjK e¨e¯v Ašf³ Kwi‡Z nB‡e|	K| wkí gšYvjq L| cwi‡ek I eb gšYvjq M| cwi‡ek Awa`ßi N| e¯ gšYvjq O| cvU gšYvjq	
2.3	miKvix I †emiKvix Dfq Lv‡Z mKj bZb wk‡íi †¶‡Î cwi‡ekMZ cwZwµqv wbi¡cb (B.AvB.G) Ges cwi‡ek `lY wbqšY e¨e¯v Ašf³ Kwi‡Z nB‡e|	K| cwi‡ek I eb gšYvjq L| cwiKíbv Kwgkb M| wkí I mswkó Ab¨vb¨ gšYvjq N| cwi‡ek Awa`ßi O| wewb‡qvM †evW P| e¯ gšYvjq Q| e¯ cwi`ßi	
2.4	AvewmK GjvKvi g‡a¨ Aew¯Z wkí cwZôvbmgn µgvš‡q Dch³ ¯v‡b ¯vbvš‡ii c‡Póv †blqv nB‡e Ges cwiKwíZfv‡e wkí cwZôvb ¯vc‡bi j‡¶¨ ¯vb wPwýZ Kwi‡Z nB‡e|	K| wkí gšYvjq L| fwg gšYvjq M| cwi‡ek I eb gšYvjq N| cZ gšYvjq O| kni Dbqb ms¯vmgn P| †Rjv ckvmKMb Q| †cŠi cwZôvbmgn	

	LvZ	ev¯ewqbKvix KZc¶
		R| DcwRjv ckvmbmgn
		S| e¯ gšYvjq
		T| e¯ cwi`ßi
2.5	cwi‡e‡ki Rb¨ ¶wZKviK Ges ˆRe-¶wqò bq GBi¡c cY¨ Drcv`bKvix bZb wkí cwZôvb ¯vcb Ab‡gv`b chvqµ‡g wbwl× Kwi‡Z nB‡e|	K| cwi‡ek I eb gšYvjq L| ewYR¨ gšYvjq M| wkí I mswkó Ab¨vb¨ gšYvjq N| wewb‡qvM †evW
2.6	‡h †Kvb cKvi ¶wZKviK I welv³ eR¨‡K KvPvgvj wnmv‡e Avg`vbx ev e¨envi Kwiqv †Kvb cKvi wkí ¯vc‡bi D‡`¨vM wbwl× Kwi‡Z nB‡e|	K| wkí I Ab¨vb¨ mswkó gšYvjq L| ewYR¨ gšYvjq M| cwi‡ek I eb gšYvjq N| gL¨ Avg`vbx ißvbx wbqš‡Ki `ßi O| wewb‡qvM †evW P| e¯ gšYvjq Q| e¯ cwi`ßi
2.7	wkí †¶‡Î we‡kl ¶wZKviK fvix avZ (Heavy Metal) h_v gviKwi, †µwgqvg, †jW BZ¨w` e¨envi wbi“rmwnZ Kwievi gva¨‡g Povš chv‡q wbwl× Kwievi e¨e¯v Mnb Kwi‡Z nB‡e|	K| wkí gšYvjq L| ewYR¨ gšYvjq M| wewb‡qvM †evW N| cwi‡ek Awa`ßi
2.8	`lYKvix wkí KviLvbvq `lY cwiex¶Y Kwievi wbR wbR e¨e¯v _vKvi welq Ašf³ Kwi‡Z nB‡e|	K| wkí I mswkó Ab¨vb¨ gšYvjq L| cwi‡ek Awa`ßi M| wewb‡qvM †evW N| ivóvqZ wkí cwZôvbmgn O| e¯ gšYvjq P| e¯ cwi`ßi
2.9	wk‡í Ò l‡qó cviwgU/Kb‡m›U AWvió c×wZ Pvj Kwi‡Z nB‡e hvnv‡Z eR¨ cwi‡kvab I AcmviY e¨e¯vi DbœZ nq|	K| wkí I mswkó Ab¨vb¨ gšYvjq L| cwi‡ek Awa`ßi M| wewb‡qvM †evW N| e¯ gšYvjq O| e¯ cwi`ßi

LvZ **ev¯evqbKvix KZc¶**

2.10 wkí†¶‡Î wewfb c`v‡_i cbt e¨envi‡ii gva¨‡g eR¨ nv‡mi welqwU Drmwnz Kwi‡Z nB‡e|
K| wkí I mswkó Ab¨vb¨ gšYvjq
L| wewb‡qvM †evW
M| cwi‡ek Awa`ßi
N| e¯ gšYvjq
O| e¯ cwi`ßi

2.11 wkí cwZôv‡b KgiZ‡`i ¯v¯¨ i¶vi wel‡q h_vh_ e¨e¯v MnY Kwi‡Z nB‡e|
K| wbcmg
L| cavb KviLvbv cwi`k‡Ki `ßi
M| cwi‡ek Awa`ßi
N| wkí I mswkó Ab¨vb¨ gšYvjq
O| kg I Rbkw³ gšYvjq
P| e¯ gšYvjq
Q| e¯ cwi`ßi

3| ¯v¯¨ I ¯v¯¨weavb t

3.1 cjx I kni GjvKvq weï× cwbi mieivn wbwðZKiY Ges KvPv I Sjš cvqLvbvi cwie‡Z ¯í Li‡Pi m¨wbUvix c×wZi cvqLvbv Pvj Kwi‡Z nB‡e|
K| ¯vbxq miKvi wefvM
L| Rb¯v¯¨ c‡KŠkj Awa`ßi
M| †cŠi ckvmbmgn

3.2 †`‡ki b`x-bvjv, Lvj-wejmn †h †Kvb Rjvk‡q wkí †cŠi, Kwl I Ab¨ cKvi `wlZ/¶wZKviK eR¨ wb‡¶‡ci welqwU‡K h_vh_ AvBb cYqb I c‡qv‡Mi gva¨‡g K‡Vvi fv‡e wbqšY Kwi‡Z nB‡e|
K| cwi‡ek Awa`ßi
L| ¯vbxq miKvi cwZôvbmgn

3.3 kniv Â‡j †Lvjvwvox‡Z I w`evfv‡M Wvówb ev AveRbv ¯c nB‡Z eR¨ msMn, cwienb I ¯cxKiY wbwl× Kwi‡Z nB‡e|
K| ¯vbxq miKvi wefvM
L| †cŠi KZc¶mgn

3.4 G·‡i mn mKj †ZRw¯‹q c`v_, cvigvYweK c`v_, †ZRw¯‹q eR¨ c`v_, †ZRw¯‹q hšcwZ, cvigvYweK M‡elYv I kw³ Pjx cfwZi e¨envi I Kvhµ‡gi e¨enviRwbZ ¶wZKi cwZwµqv nB‡Z Rb¯v¯¨ I cwi‡ek i¶vK‡í mKj c`‡¶c MnY Kwi‡Z nB‡e|
K| ¯v¯¨ I cwievi Kj¨vY gšYvjq
L| weÁvb I chw³ wefvM
M| cigvY kw³ Kwgkb
N| ¯v¯¨ Awa`ßi
O| wkí I mswkó Ab¨vb¨ gšYvjq
P| e¯ cwi`ßi

	LvZ		ev¯evqbKvix KZc¶
3.5	¯v¯¨ wk¶v cvVv µ‡g cwi‡ek welq Ašf³ Kwi‡Z nB‡e		K| ¯v¯¨ I cwievi Kj¨vY gšYvjq L| ¯v¯¨ wk¶v e¨‡iv

4| Rvjvbx

4.1	Rvjvbx msi¶Y I cwi‡ek msi¶‡Yi Ab¨Zg D‡Ï‡k¨ DbZgv‡bi Pjv ceZb I m¤úmvi‡Yi Rb¨ e¨vcK wfwËK cKí ev¯evqb Kwi‡Z nB‡e|	K| L| M| N| O| P| Q|	cwi‡ek I eb gšYvjq weÁvb I chw³ wefvM cwi‡ek Awa`ßi we wm Gm AvB Avi ¯vbxq miKvi cwZôvbmgn eb Awa`ßi we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq
4.2	MvgvÂ‡j Kqjv, †K‡ivwmb, †c‡Uvj cfwZ Rvjvbxi e¨envi m¤úmviY Kwi‡Z nB‡e hvnv‡Z Rvjvbx KvV, Kwl eR¨, †Mvei BZ¨w` Rvjvbx mvkqceK Kwl‡¶‡Î ^Re mvi wnmv‡e e¨envi Kiv hvq|	K| L| M| N| O|	we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq ewYR¨ gšYvjq ¯vbxq miKvi cwZôvbmgn eb Awa`ßi Kwl m¤úmviY Awa`ßi
4.3	MvgvÂ‡j ev‡qv-M¨vm, †mŠikw³, wgwb nvB‡WvB‡jKwUK BDwbU I evqKj ¯vc‡bi gva¨‡g MvgxY Rvjvbx mieivn ew×i e¨e¯v Kwi‡Z nB‡e|	K| L| M| N|	we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq we wm Gm AvB Avi weÁvb I chw³ wefvM cwi‡ek Awa`ßi
4.4	wW‡R‡j mvjdv‡ii cwigvY Ges †c‡Uv‡j mxmvi cwigvY nvm Kivmn wewfb cKvi Rvjvbx‡Z `lY móKvix Dcv`vb nv‡mi e¨e¯v MnY Kwi‡Z nB‡e|	K| L| M|	we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq we I wR Gg wm evsjv‡`k †c‡Uwjqvg K‡cv‡ikb
4.5	cPwjZ Rvjvbxi weKí Drm Awe¯v‡ii Rb¨ M‡elYv †Rvi`vi Kwi‡Z nB‡e	K| L|	weÁvb I chw³ wefvM we wm Gm AvB Avi
4.6	‡h †Kvb cKvi cv_wgK I ewYwR¨K Rvjvbxi e¨envi I i¡cvši hvnv‡Z cwi‡e‡ki fvimv‡g¨i Dci †Kvbi¡c wei¡c cwZwµqv mwó bv K‡i Zrcw Z mRvM `wó iwL‡Z nB‡e|	K| L|	we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq cwi‡ek I eb gšYvjq

	LvZ		**ev¯evqbKvix KZc¶**
4.7	Rvjvbxi Drm wewfb cvKwZK m¤ú` †hgb, ^Zj, M¨vm, Kqjv, wcU BZ¨w` AvniY I weZiY hvnv‡Z evq, cwb, fwg, nvB‡Wvjw RK¨vj e¨v‡jÝ Ges B‡Kwm‡ó‡gi Dci †Kvbiƒc weiƒc cwZwµqv mwó bv K‡i †m D‡Ï‡k¨ h_vh_ e¨e¯v MnY Kwi‡Z nB‡e|	K|	we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq|
		L|	cwi‡ek I eb gšYvjq
4.8	evsjv‡`‡k cwi‡ekm¤§Z †c‡Uwjqvg (mxmvg³) e¨envi‡ii m¤ve¨Zv cix¶v Kwi‡Z nB‡e|	K|	we`¨r, Rvjvbx I LwbR m¤ú` gšYvjq
		L|	evsjv‡`k †c‡Uwjqvg K‡cv‡ikb
4.9	hvbevn‡bi Kv‡jv †avqv wbqš‡Yi Rb¨ wdU‡bm mwUwd‡KU c`v‡bi wel‡q we‡kl mZKZv Aej¤b Kwi‡Z nB‡e| †mB mv‡_ mswkó AvB‡bi weavb h_vh_fv‡e c‡qv‡Mi Rb¨ wbqwgZ åvg¨gvY Av`vjZ cwiPvjbv Kwi‡Z nB‡e|	K|	gšx cwil` wefvM
		L|	moK I moK cwienb wefvM
		M|	we, Avi, wU, G
		N|	cwi‡ek Awa`ßi
		O|	¯ivó gšYvjq

5\| cwb Dbqb, eb¨v wbqšY I †mP t

5.1	cwb m¤ú` Dbqb, eb¨v wbqšY I †mP e¨e¯v m¤úmvi‡Yi j‡¶¨ MnxZ cKí¸wji cwi‡ekMZ cwZwµqv wbiƒc‡Yi Rb¨ Ri“ix wfwË‡Z cwi‡ekMZ mgx¶v (Environmental audit) cwiPvjbv Kwi‡Z nB‡e Ges H mgx¶vi wfwË‡Z cwi‡ekMZ weiƒc cwZwµqv wPwýZ Kwiqv Z`bhvqx cKí ms‡kvab I cwi‡ekMZ AebwZ †iva I `lY we‡gvP‡bi Rb¨ c`‡¶c MnY Kwi‡Z nB‡e|	K|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq
		L|	evsjv‡`k cwb Dbqb †evW
		M|	cwi‡ek I eb gšYvjq
		N|	Gd wc wm I
5.2	mKj c¯wewZ I bZb cK‡íi cwiKíbvq cwi‡ekMZ cwZwµqv (B AvB G) wbiƒc‡Yi e¨e¯v Ašf³KiY Ges GZ`msµvš weiƒc cwZwµqv	K|	cwiKíbv Kwgkb
		L|	cwi‡ek I eb gšYvjq
		M|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq

		LvZ	**ev¯ewqbKvix KZc¶**
	wbim‡bi Rb¨ c‡qvRbxq Kvhµg I wewb‡qvM Ašf³ Kwi‡Z nB‡e|	N|	evsjv‡`k cwb Dbqb †evW
5.3	‡`‡ki b`-b`x, Lvj-wej I Ab¨ †h †Kvb Rjvk‡q, Mn I wkíRvZ ev Ab¨ †Kvb cKvi `wlZ eR¨ hvnv‡Z cwi‡kva‡bi c‡e †djv bv nq Zvnv K‡Vvi fv‡e wbqšY Kwi‡Z nB‡e|	K| L| M| N| O| P| Q|	wkí I mswkó Ab¨vb¨ gšYvjq cwi‡ek I eb gšYvjq cwi‡ek Awa`ßi wewb‡qvM †evW ivóvqvË wkí cwZôvbmgn e¯ cwi`ßi evsjv‡`k †ikg †evW
5.4	b`-b`x, Lvj-wej I Ab¨vb¨ mKj cKvi Rjvkq Lb‡bi gva¨‡g Dnv‡`i bve¨Zv mwó I aviY¶gZv ew× Kwievi e¨e¯v MnY Kwi‡Z nB‡e|	K| L|	†bŠ-cwienb gšYvjq †mP, cwb Dbqb I eb¨v wbqšY gšYvjq|
5.5	RvZxq D‡`¨v‡Mi mwnZ AvÂwjK I AvšRwZK mn‡hwMZv m¤ú³ Kwievi gva¨‡g †`‡ki eb¨v wbqš‡Yi, gi“ ceYZv I jeYv³Zv ew× †iv‡ai ¯vqx e¨e¯v †Rvi`vi Kwi‡Z nB‡e|	K| L| M| N| O|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq ciivó gšYvjq cwi‡ek I eb gšYvjq cwZi¶v gšYvjq evsjv‡`k Avenvlqv Awa`ßi
5.6	wewfb Dbqb KgKvÛ †hgb †mP cKí, iv¯vNvU, eva BZ¨w` wbgv‡Yi d‡j cwb I cqtwb®wkb e¨e¯v hvnv‡Z evavcvß bv nq Ges cvKwZK Rjvkq¸wji MwZ I †mvZ hvnv‡Z evavcvß bv nq BZ¨w`mn Ab¨vb¨ cwi‡ekMZ w`‡Ki cwZ `wó`vbceK we‡kl cwiKíbv MnY Kwi‡Z nB‡e|	K| L| M|	¯vbxq miKvi wefvM †hvMv‡hvM gšYvjq †mP, cwb Dbqb I eb¨v wbqšY gšYvjq
5.7	‡`‡ki †h mKj AÂ‡j f-Mf¯ cwb¯i MnY‡hvM¨ mxgvi bx‡P bwgqv wMqv‡Q †mB mKj GjvKvi cwb¯i h_vh_ chv‡q DbxZ Kwievi Rb¨ we‡kl cKí MnY Kwi‡Z nB‡e Ges eZgv‡b ev¯ewqZ Kvhµ‡gi d‡j f-Mf¯ cwb¯i hvnv‡Z Avi I bx‡P bwgqv bv hvq Zvnv †iva Kwi‡Z nB‡e|	K| L| M|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq ¯vbxq miKvi wefvM Gd wc wm I

	LvZ		**ev¯evqbKviix KZc¶**
5.8	cwb‡K †`‡ki me‡P‡q ¸i“ZcY I gj¨evb cvKwZK m¤ú` wnmv‡e wPwýZ Kwi‡Z nB‡e Ges cwb m¤ú‡`i Dbqb e¨e¯vcbvi mv‡_ mswkó cwZôvb¸wj wb‡R‡`i‡K RvZxq m¤ú` e¨e¯vcbv ms¯v wnmv‡e we‡ePbv Kwi‡e|	K|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq
		L|	Gd wc wm I
		M|	Gg wc I
		N|	evsjv‡`k cwb Dbqb †evW
5.9	cwb Dbqb I e¨e¯vcbv msµvš mKj cK‡íi cKí ev¯evqb cieZx h_vh_ Acv‡ikb I †gBb‡Ub¨vÝ wbwðZ Kwi‡Z nB‡e Ges cwi‡e‡ki Dci GB mKj cK‡íi cfve wbqwgZ gwbUi Kwi‡Z nB‡e|	K|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq
		L|	cwb Dbqb †evW
		M|	Gd wc wm I
		N|	evsjv‡`k Kwl Dbqb ms¯v
5.10	cwb m¤ú` e¨e¯vcbvi mwnZ RwoZ mKj ms¯vi cwi‡ek †Kvl MVb Kwi‡Z nB‡e|	K|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq
		L|	cwb Dbqb †evW
		M|	Gd wc wm I
		N|	Gg wc I
		O|	we G wW wm
5.11	b`-b`xi MwZ cwieZb, Rjvfwg I Rjvk‡qi Ae¯vb I AvqZb BZ¨w` m¤ú‡K wbqwgZ Rixc, gwbUwis I M‡elYv KvR cwiPvjbv Kwi‡Z nB‡e|	K|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq
		L|	evsjv‡`k cwb Dbqb †evW
		M|	cwZi¶v gšYvjq
		N|	mv‡f Ae evsjv‡`k
		O|	¯úvi‡mv

6| fwg t

6.1	fwgi Drcv`b ¶gZv Ges fwgi Dc‡hvMZv †kYx web¨vm (Land capability and land suitability classification) Gi wfwË‡Z fwgi h_vh_ I m‡evËg e¨envi wbwðZ Kivi j‡¶¨ Av_-mvgwRK ev¯eZvi wbwi‡L Kwl Kvh, ebvqb, wkívqb, bMivqb, Mnvqbgjk mweav BZ¨w`‡Z e¨envi msµvš Zjbvgjk I AMvwaKvi wfwËK	K|	fwg gšYvjq
		L|	Kwl gšYvjq
		M|	wkí I mswkó Ab¨vb¨ gšYvjq
		N|	¯vbxq miKvi wefvM
		O|	cZ gšYvjq
		P|	eb Awa`ßi
		Q|	e¯ cwi`ßi
		R|	evsjv‡`k †ikg †evW

	LvZ	ev¯evqbKvix KZc¶	
	GKwU cwi‡ek m¤§Z RvZxq fwg e¨envi cwiKíbv cYqb I ev¯evqb Kwi‡Z nB‡e|		
6.2	‡`‡ki DËivÂ‡j gi“gqZvi we¯vi †iv‡a we‡kl I mgwšZ fwg msi¶YgjK cKí ev¯evqb Kwi‡Z nB‡e|	K| L| M| N|	Kwl gšYvjq we G wW wm fwg gšYvjq eb Awa`ßi
6.3	fwg ¶q‡iva, DeiZv msi¶Y, fwg cbi“×vi, DcKjxq AÂ‡ji fwg msi¶Y I Dbqb BZ¨w`i D‡Ï‡k¨ h_vh_ Kvhµg MnY Kwi‡Z nB‡e|	K| L| M| N|	fwg gšYvjq Kwl gšYvjq ‡mP, cwb Dbqb I eb¨v wbqšY gšYvjq eb Awa`ßi
6.4	cvnvox AÂ‡j gwU KwUqv mgvb Kiv, gwU †Lv`vB I Acmvib Kwiqv †Kvb GjvKvi fwgi cvKwZK Ae¯v (Landscape) webó Kiv, cvnvo nB‡Z h‡_”Qfv‡e gwU I cv_i AvniY Kwiqv cvKwZK fvimvg¨ nxbZv mwói Kvhµg e‡Üi e¨e¯v MnY Kwi‡Z nB‡e| IqvUvi †kW e¨e¯vcbv‡K AMwaKvi c`vb Kwi‡Z nB‡e|	K| L| M| N|	¯vbxq miKvi wefvM †hvMv‡hvM gšYvjq †mP,cwb Dbqb I eb¨wbqšb gšYvjq fwg gšYvjq
6.5	cwiKwíZ fwg e¨envi wbwðZ Kwievi j‡¶¨ h_vh_ fwg e¨envi AvBb cYqY I KvhKifv‡e Dnvi mô c‡qvM Kwi‡Z nB‡e|	K| L| M| N| O| P|	fwg gšYvjq cwi‡ek I eb gšYvjq Kwl gšYvjq wkí gšYvjq ¯vbxq miKvi wefvM cZ gšYvjq
6.6	hvnv‡`i wbKU nB‡Z fwg AwaMnY Kiv nq A_ev hvnviv fwg ¶q I Aebq‡b ¶wZM¯ nq Zvnv‡`i Rb¨ Dch³ ¶wZci‡Yi e¨e¯v Kwi‡Z nB‡e|	K| L| M|	fwg gšYvjq †Rjv ckvmb mswkó mKj cKí ev¯evqbKvix ms¯v
6.7	†`‡ki DËivÂ‡j gi“gqZvi we¯vi, fwg cbti“×vi, fwg ¶q‡iva, fwgi eûwea e¨envi, DcKj AÂ‡ji fwg	K| L|	†mP, cwb Dbqb I eb¨v wbqšY gšYvjq Kwl gšYvjq

LvZ		ev¯evqbKvix KZc¶
msi¶Y I Dbqb, IqvUvi †kW GjvKvi Ae¯v BZ¨w` m¤ú‡K wbqwgZ gwbUwis/ Rixc I M‡elYv Kv‡Ri e¨e¯v _vwK‡Z nB‡e|	M| N| O| P| Q|	cwi‡ek I eb gšYvjq fwg gšYvjq cwZi¶v gšYvjq mv‡f Ae evsjv‡`k ¯úvi‡mv

7| eb, eb¨cvYx I ^Re ^ewPÎ t

7.1	eZgvb ebm¤ú` msi¶Y, ebwbab cwZ‡iva I e¨vcKfv‡e bZb ebvqb Kwi‡Z nB‡e|	K| L|	cwi‡ek I eb gšYvjq eb Awa`ßi
7.2	miKvix ebfwg wnmv‡e wPwýZ GjvKv e¶v”Qw`Z Kivi KvR ZiwšZ Kwi‡Z nB‡e|	K|	eb Awa`ßi
7.3	mvgwRK I cjx ebvqb KgmPxi e¨vcK ev¯evq‡bi gva¨‡g MvgxY GjvKvi e¶ I ebR m¤ú` ew×i welqwU‡K AMwaKvi c`vb Kwi‡Z nB‡e|	K| L| M| N|	cwi‡ek I eb gšYvjq eb Awa`ßi ¯vbxq miKvi wefvM ¯vbxq miKvi cwZôvbmgn
7.4	fwgi eûwea e¨envi, A_‰bwZK Dbqb I cwi‡ek Dbq‡b mnvqK wnmv‡e Kwl-eb (Agro-Forestry) c×wZ‡K DrmwnZ Kwi‡Z nB‡e|	K| L| M|	cwi‡ek I eb gšYvjq Kwl gšYvjq eb Awa`ßi
7.5	‡`‡k ebR m¤ú` wfwËK wkí cwZôvbmgn‡K weKí KvPvgv‡ji Drm mÜvbmn c‡qvRbxq KvPvgvj Drcv`‡bi wel‡q wbR¯ cZ¨¶ wKsev c‡iv¶ D‡`¨vM MnY Kwi‡Z nB‡e|	K| L| M| N|	cwi‡ek I eb gšYvjq evsjv‡`k eb wkí ms¯v eb M‡elYv BbmwUwUDU we wm Gm AvB Avi
7.6	mKj wefvMxq Dbqb cK‡í ebvqb KgmPx Ašf³Ki‡Yi wel‡q miKvix wm×v‡ši h_vh_ ev¯evqb wbwðZ Kwi‡Z nB‡e|	K| L| M|	cwiKíbv Kwgkb cwi‡ek I eb gšYvjq mKj gšYvjq/wefvM
7.7	Dc‡Rjv I Mvg chv‡qi mKj ebvqb KgmPx‡Z gwnjv‡`i cZ¨¶ AskMnY wbwðZ Kwievi D‡Ï‡k¨ c‡qvRbxq mKj e¨e¯v MnY Kwi‡Z nB‡e|	K| L|	¯vbxq miKvi wefvM eb Awa`ßi

	LvZ		ev¯ewqbKvix KZc¶
7.8	eb¨cvYx, Rjvfwg, cïcwL msi¶Y Kvhµg‡K AMwaKvi c`vb KiZt wejß cvq cRwZmg‡ni msi¶‡Yi wel‡q M‡elYv I Dbqb KgmPx MnY Kwi‡Z nB‡e|	K| L|	cwi‡ek I eb gšYvjq eb Awa`ßi
7.9	eb¨ cïcwL wkKvi Ges eb¨cvYx I Pvgov ißvbxi Dci eZgvb wb‡lavÁv envj iwLqv eb¨cvYxi Avevm¯j msi¶Y Z_v Afqvi¥ mwó‡K Drmvn c`vb Kwi‡Z nB‡e|	K| L|	cwi‡ek I eb gšYvjq eb Awa`ßi
7.10	Rxe ˆewPÎ msi¶Y msµvš M‡elYv, Ávb I AwfÁZv wewbgq Kvhµg †Rvi`vi Kwi‡Z nB‡e| GB D‡Ï‡k¨ c‡qvRbxq M‡elYv I Z_¨‡K›` ¯vcbmn †`‡ki eb¨cvYx msµvš me‡kl cwi¯wZ wbi‡c‡bi Rb¨ mgx¶v cwiPvjbv Kwi‡Z nB‡e|	K| L| M|	cwi‡ek I eb gšYvjq eb Awa`ßi cwi‡ek Awa`ßi
7.11	Kv‡Vi weKí wbgvY mvgMx, Rvjvbx BZ¨w`i e¨envi ev KvV Avg`vbx DrmwnZ Kwi‡Z nB‡e|	K| L| M| N| O|	ewYR¨ gšYvjq Z_¨ gšYvjq eb Awa`ßi eb M‡elYv BbwówUDU weÁvb I chw³ wefvM
7.12	eb-DRvo, eb-m¤úmviY I ebvq‡bi cwi¯wZ wbi‡c‡Yi Rb¨ wbqwgZ mgx¶v cwiPvjbv I M‡elYv Kwi‡Z nB‡e|	K| L| M|	cwi‡ek I eb gšYvjq eb Awa`ßi ¯úvi‡mv

8| grm¨ I cïm¤ú`t

8.1	nvIi, evIi, wej cfwZ Rjvfwg ms®vi KiZt GB¸wj‡K grm¨ Pv‡li Rb¨ RvZxq msiw¶Z GjvKv wnmv‡e †NvlYv Kwi‡Z nB‡e| GB Rjvfwgi AvqZb msKwPZ Kiv hvB‡e bv|	K| L| M|	grm¨ I cïm¤ú` gšYvjq nvIi Dbqb †ewW grm¨ Awa`ßi

	LvZ		ev¯ewqbKvix KZc¶
8.2	‡`‡ki mKj `xwN I cK‡i grm¨ Pvl DrmwnZ Kwi‡Z nB‡e Ges †`‡ki cKi, Lvj, wej, `xwN BZ¨w` Rjvfwg‡K c‡Z¨K ermi †mwPqv grm¨ m¤ú` mg‡j aesm Kivi Dci wewa wb‡la Av‡ivc Kwi‡Z nB‡e| mg‡`i †cvbv, wPswo I Ab¨vb¨ grm¨ m¤ú‡`i e¨vcv‡i Abi¡c cwi‡ek m¤§Z c`‡¶c MnY Kwi‡Z nB‡e|	K| L| M|	grm¨ I cïm¤ú` gš¿Yvjq grm¨ Awa`ßi Dc‡Rjv ckvmb
8.3	wPrwo Drcv`b ew× I wPswo m¤ú` msi¶Y I cwi‡ekMZ ¯v_ A¶b iwLevi Rb¨ cwi‡ek I eb gš¿Yvj‡qi civgk MnY Kwi‡Z nB‡e| wPswo Pv‡li Rb¨ miKvi DcKjx GjvKv wPwýZ Kwiqv w`‡eb|	K| L| M| N|	grm¨ I cïm¤ú` gš¿Yvjq cwi‡ek I eb gš¿Yvjq eb Awa`ßi grm¨ Awa`ßi
8.4	grm¨ †ivM I gnvgvix cwZ‡iva K‡í c‡qvRbxq M‡elYv I Kvhµg †Rvi`vi Kwi‡Z nB‡e|	K| L| M|	grm¨ I cïm¤ú` gš¿Yvjq grm¨ M‡elYv Bbw÷wUDU Kwl wekwe`¨vjq
8.5	hÎZÎ cï R‡en †iva Kivi Rb¨ ¯vbxq ckvm‡bi mnvqZvq AvaywbK KmvB Lvbv ¯vcb Kwi‡Z nB‡e| Mevw` cï I cvLxi gZ‡`n gwUi bx‡P cwZqv †djv I KmvBLvbvmg‡ni eR¨ cwi‡ek m¤§Zfv‡e AcmviY Kwievi wel‡q MY-m‡PZbZv ew×i Rb¨ c`‡¶c MnY Kwi‡Z nB‡e|	K| L| M| N|	¯vbxq miKvi wefvM cwi‡ek Awa`ßi †cŠi ckvmbmgn Z_¨ gš¿Yvjq
8.6	MvgvÂ‡j eZgvb †MvPviY fwg i¶v Ges cwZ Mv‡g b¨bZg cwigvY GjvKv PviYfwg wnmv‡e mwó I msi¶Y Kivi welqwU Ri“ix wfwË‡Z we‡ePbv Kwi‡Z nB‡e|	K| L| M| N|	fwg gš¿Yvjq cwi‡ek I eb gš¿Yvjq grm¨ I cïm¤ú` gš¿Yvjq Dc‡Rjv ckvmb
8.7	nvlo, evli, wej, `xwN BZ¨w` Rjvfwgi Ae¯v m¤ú‡K wbqwgZ gwbUwis I M‡elYv Kwi‡Z nB‡e|	K| L| M| N|	grm¨ I cïm¤ú` gš¿Yvjq cwZi¶v gš¿Yvjq ¯úvi‡mv mv‡f Ae evsjv‡`k

LvZ ev¯ÍevqbKvix KZc¶

9| Lv`¨ t

9.1 Lv‡`¨ †fRvj wgkv‡bv‡K GKwU ¸i“Zi Aciva wnmv‡e wPwýZ Kwiqv eZgvb AvBb ms‡kvab ceK GBi¦c KvhKjvc K‡Vvi fv‡e wbqšY Kwi‡Z nB‡e|
K| Lv`¨ gšYvjq
L| ¯vbxq miKvi wefvM
M| ¯v¯¨ I cwievi Kj¨vY gšYvjq

9.2 Lv`¨ msi¶‡Y KwÎg evjvBbvk‡Ki cwie‡Z wewfb cvKwZK c×wZ e¨envi‡K DrmwnZ Kwi‡Z nB‡e|
K| Lv`¨ gšYvjq
L| Kwl gšYvjq
M| ¯v¯¨ I cwievi Kj¨vY gšYvjq

9.3 we‡`k nB‡Z wkïLv`¨mn mKj cKvi Lv`¨ Avg`vbxi mgq Lv‡`¨i ¸YMZ gvb, †ZRw¯‹qZv I cwi‡ekMZ cwZwµqv wbi“c‡Yi e¨e¯v Kwi‡Z nB‡e|
K| ewYR¨ gšYvjq
L| Lv`¨ gšYvjq
M| ¯v¯¨ I cwievi Kj¨vY gšYvjq

9.4 Kwl Rwgi Kwl ewnfZ e¨envi Ges Lv`¨km¨ Drcv`bKvix Rwg Ab¨ KwlcY¨ Drcv`‡bi Rb¨ e¨envi wbqwšZ Kwi‡Z nB‡e|
K| Kwl gšYvjq

9.5 djgj, mewR I Wvj BZ¨w`‡K †cvKv I B`‡ii nvZ nB‡Z g³ ivLvi Rb¨ welh³ Jla e¨envi K‡Vvi fv‡e `gb Kwi‡Z nB‡e|
K| cwi‡ek I eb gšYvjq
L| Lv`¨ gšYvjq
M| Kwl gšYvjq
N| Z_¨ gšYvjq

10| DcKjxq I mwgw`K cwi‡ek t

10.1 DcKjxq I mwgw`K cwi‡ek msi¶Y I DbqbgjK Kvhµg mgšq I cwiex¶‡Yi D‡Ï‡k¨ cwi‡ek I eb gšYvj‡q GKwU we‡kl †mj MVb Kwi‡Z nB‡e|
K| cwi‡ek I eb gšYvjq
L| eb Awa`ßi
M| cwi‡ek Awa`ßi
N| eb M‡elYv BbwówUDU

10.2 DcKjxq GjvKvq bZb RwMqv DVv fwg msi¶Y I w¯‹wZkxj Kwievi j‡¶¨ ebvq‡bi Rb¨ AMwaKvi wfwË‡Z eb Awa`ß‡ii wbKU n¯‹vši Kwi‡Z nB‡e|
K| fwg gšYvjq
L| eb Awa`ßi

	LvZ		ev¯ewqbKvix KZc¶
10.3	†`‡ki mg`mxgvi (Territorial Water) `lY †ivaK‡í evsjv‡`k †bš-ewnbx‡K mve¶wYK `wó iwL‡Z nB‡e Ges mg` cwienb Awa`ßi GB Kvhµg cwiex¶Y Kwi‡e|	K| L| M| N|	cwZi¶v gšYvjq evsjv‡`k †bš-ewnbx †bš-cwienb gšYvjq mg` cwienb Awa`ßi
10.4	mvgw`K Rjfv‡M †Kvb †bš-`NUbvi Kvi‡Y `lY †ivaK‡í ¯vbxq I RvZxq Ri“ix KgmPx (Local and National Contingency) I A_vq‡bi e¨e¯v _wK‡Z nB‡e Ges AvÂwjK wfwË‡Z Kvhµg mgšq Kwi‡Z nB‡e|	K| L| M| N|	†bš-cwienb gšYvjq cwZi¶v gšYvjq evsjv‡`k †bš-ewnbx mg` cwienb Awa`ßi
10.5	PÆMvg I gsjv e›`‡i Rvnv‡R RgvKZ AveRbv ¯vbvši Ges RvnvR nB‡Z eR¨ ^Zj I ^ZjRvZxq mvgMx cwi‡ek m¤§Zfv‡e Acmvi‡Yi Rb¨ Ri“ix wfwË‡Z h_vh_ e¨e¯v MnY Kwi‡Z nB‡e|	K|	†bš-cwienb gšYvjq
10.6	mg‡` eR¨ c`v_ wb‡¶‡ci c‡e Dnvi ^ewkó¨ I Dcv`vb wbi¡cY Ges cwi‡e‡k Dnvi wei¡c cwZwµqv wbaviY Ges AbgwZ c`v‡bi Rb¨ †bš-cwienb gšYvj‡q GKwU we‡kl †mj MVb Kwi‡Z nB‡e|	K| L|	†bš-cwienb gšYvjq cwi‡ek Awa`ßi
10.7	DcKjxq AÂ‡j mKj cKvi m¤ú‡`i wbivcËv I cwi‡ek e¨e¯vcbv Kv‡R mnvqZvi D‡Ï‡k¨ †bš-cwienb gšYvj‡q Ri“ix wfwË‡Z GKwU mgwšZ Ô†Kvó MvWÔ e¨e¯v Mwoqv Zwj‡Z nB‡e|	K|	†bš-cwienb gšYvjq
10.8	‡`‡ki mg` mxgvi `lY †iva, DcKjxq I mvgw`K cwi‡ek msi¶Y, DcKjxq GjvKvq bZb RwMqv DVv fwgi ch‡e¶Y, msi¶Y Ges DcKjxq GjvKvi mKj cKvi m¤ú‡`i mô e¨envi‡ii wel‡q h_vh_ e¨e¯v MnY Kwi‡Z nB‡e|	K| L| M| N| O| P|	cwZi¶v gšYvjq evsjv‡`k †bš-ewnbx †bš-cwienb gšYvjq †bš-Awa`ßi eb Awa`ßi ®úvi‡mv

LvZ ev¯ewqbKvix KZc¶

11| †hvMv‡hvM I cwienb t

11.1	‡`‡k ¯j c_ e¨e¯v hvnv‡Z mwweK fv‡e cwi‡ek m¤§Z nq Ges moK I †ijc_ e¨e¯v hvnv‡Z cwb wb¯wkb e¨e¯vi cwZeÜKZvi mwó bv K‡i †mB D‡Ï‡k¨ mZKZv Aej¤b Kwi‡Z nB‡e|	K| L| M|	†hvMv‡hvM gšYvjq moK I Rbc_ Awa`ßi †ijI‡q KZc¶
11.2	‡ij I moK c‡_ PjvPjKvix RbMY I hvbevnb hvnv‡Z MY ¯v‡¯¨i cwZ ¶wZKviK eR¨ I AveRbv wb‡¶c Ges gjgÎ Z¨vM Kwiqv cwi‡ek `lY bv K‡i †mB Rb¨ h_vh_ e¨e¯v MnY Kwi‡Z nB‡e|	K| L|	†hvMv‡hvM gšYvjq we Avi wU G
11.3	moK, †ij I Rj c‡_ PjvPjKvix mKj hvbevnb nB‡Z wbMZ †avqv I kã wbw`ó gvÎvq wbqš‡Yi D‡Ï‡k¨ Ges mKj hvbevn‡bi c‡qvRbxq i¶Yv‡e¶‡Yi Rb¨ h_vh_ e¨e¯v MnY Kwi‡Z nB‡e| GB mKj hvbevnb ^Zix i †`kxq KviLvbv¸wj‡K c‡qvRbxq e¨e¯v Mn‡Yi I wb‡`k c`vb Kwi‡Z nB‡e Ges wb‡`k cwZcvjb wel‡q Dch³ cwi`kb e¨e¯v iwL‡Z nB‡e|	K| L| M| N| O|	†hvMv‡hvM gšYvjq cwjk ckvmb †bŠ-cwienb gšYvjq we Avi wU G wkí I mswkó Ab¨vb¨ gšYvjq
11.4	Af¨šixY †bŠ c‡_ PjvPjKvix †bŠhvb hvnv‡Z cwb `lY Kwi‡Z bv cv‡i †mB w`‡K MYm‡PZbZv mwó I mZKZv Aej¤b Kwi‡Z nB‡e|	K| L| M|	†bŠ-cwienb gšYvjq Avf¨šixY †bŠ-cwienb ms¯v mg` cwienb Awa`ßi
11.5	Af¨šixY †bŠ e›`i I WKBqv‡W cwbi `lY wbqšY e¨e¯v wbwðZ Kwi‡Z nB‡e|	K|	†bŠ-cwienb gšYvjq
11.6	wegvb e›`i wbgv‡Yi d‡j hvnv‡Z mweK †Kvbiƒc cwi‡ekMZ mgm¨vi mwó bv nq ZrcwZ mZKZv Aej¤b Kwi‡Z nB‡e|	K| L|	†emvgwiK wegvb cwienb I chUb gšYvjq †emvgwiK wegvb PjvPj KZc¶

	LvZ		**ev¯evqbKvix KZc¶**
11.7	D‡ovRvnvR PjvP‡ji d‡j evq I kã `I‡Yi c‡Kvc nv‡m mecKvi mZKZv Aej¤b Kwi‡Z nB‡e		K| †emvgwiK wegvb I cwienY I chUb gšYvjq L| †emvgwiK wegvb PjvPj KZc¶
11.8	‡ijc_ mn †h mKj cwienb I PjvPj e¨e¯v A‡c¶vKZ Kg `lY mwó K‡i †m¸wji e¨envi DrmwnZ Kwi‡Z nB‡e		K| †hvMv‡hvM gšYvjq
11.9	iv¯v I †ijc‡_i `Bcv‡k ebvqb Kwi‡Z nB‡e		K| mswkó gšYvjq mgn L| eb Awa`ßi

12| Mn I bMivqb t

12.1	Mnvqb I bMivq‡bi Rb¨ c¯weZ mKj RvZxq AvÂwjK cKí I gvóvi cvb cYq‡bi c‡e cwi‡ekMZ cfve wbi‡cY (BAvBG) Kwi‡Z nB‡e	K| cZ gšYvjq L| ¯vbxq miKvi wefvM M| cwi‡ek I eb gšYvjq N| cwi‡ek Awa`ßi
12.2	kniv‡j ew¯evmx‡`i Rb¨, cwiKwíZ cbevmb e¨e¯vq cwi‡ek m¤§Z e¨e¯vw` Ašf³ Kwi‡Z nB‡e		K| cZ gšYvjq L| ¯vbxq miKvi wefvM M| bMi Dbqb cwi`ßi
12.3	‡`‡ki cavb I enr kni ¸wj‡Z RbmsL¨vi Pvc nvm Ges cwi‡ek Dbq‡bi j‡¶¨ Dckni wbgv‡Yi e¨e¯v MnY Kwi‡Z nB‡e		K| cZ gšYvjq L| ¯vbxq miKvi wefvM M| Mnms¯vb cwi`ßi
12.4	XvKv, PÆMvg, ivRkvnx I Ljbv cfwZ cavb bMi¸wj‡Z cwi‡ek Dbq‡bi j‡¶¨ wbweo ebvqb I Ab¨vb¨ DbqbgjK KgmPx `“Z ev¯evqb Kwi‡Z nB‡e		K| cZ gšYvjq L| bMi Dbqb cwi`ßi M| e¯ Awa`ßi N| †cŠi KZc¶mgn
12.5	‡`‡ki cavb NbemwZcY bMi¸wj‡Z wbweo I mgwšZ cwi‡ek DbqbgjK KgmPx MnY Kwi‡Z nB‡e		K| bMi Dbqb ms¯v mgn L| †bŠ-KZc¶mgn M| cZ gšYvjq

	LvZ		**ev¯—evqbKvix KZc¶**
12.6	Avewm‡mK, ewYwR¨K I wkí GjvKv c_KxKi‡Yi Rb¨ (Zoning) c`‡¶c MnY Kwi‡Z nB‡e		K| wkí I msweavb Ab¨vb¨ gš¿Yvjq L| cZ gš¿Yvjq M| bMi Dbqb ms¯—vgn N| e¯— gš¿Yvjq O| evsjv‡`k †ikg †ewW
12.7	Mn I bMivq‡bi wewfb KgmPx‡Z wbqwgZ gwbUwis I Rixc Kv‡hi e¨e¯—v iwL‡Z nB‡e		K| cZ gš¿Yvjq L| ¯—vbxq miKvi wefvM M| bMi Dbqb ms¯—v mgn N| †cŠi KZc¶mgn O| cwZi¶v gš¿Yvjq P| ¯úvi‡mv
13|	**RbmsL¨v t**		
13.1	‡`‡ki eZgvb RbmsL¨v, RbmsL¨v ew×i D”Pnvi Ges 2000 mb chš RbmsL¨v ce× †`‡ki m¤ú` I Dbqb cwµqv Ges cwi‡e‡ki Dci wK mwb`ó cfve mwó Kwi‡e †m m¤ú‡K GKwU mgx¶v cYqb Kwi‡Z nB‡e| mgx¶vq cvß Z_¨mg‡ni wfwË‡Z mswkó mKj †¶‡Î c‡qvRbxq cwi‡ek m¤§Z e¨e¯—v MnY Kwi‡Z nB‡e|	K| ¯—v¯—¨ I cwievi Kj¨vY gš¿Yvjq L| cwi‡ek I eb gš¿Yvjq
13.2	‡`‡ki Rbkw³i mgwšZ, mcwiKwíZ I cwi‡ek m¤§Z e¨envi wbwðZ Kwievi D‡Ï‡k¨ GKwU Rbkw³ cwiKíbv cYqb Kwi‡Z nB‡e		K| kg I Rbkw³ gš¿Yvjq
13.3	wewfb †m±‡i cwi‡ek msi¶Y I DbqbgjK Kvhµ‡g gwnjv‡`i fwgKvi Dci h_vh_ ¸i“Z Av‡ivc Kwiqv Zvnv‡`i mwµq Ask MnY wbwðZ Kwi‡Z nB‡e		K| cwiKíbv Kwgkb L| gwnjv welqK gš¿Yvjq M| cwi‡ek I eb gš¿Yvjq
13.4	RbmsL¨v‡K †`‡ki cavbZg mgm¨v wPwýZ Kwiqv Gi wbqšY Ges h_vm¤e `“Z G msL¨v w¯—wZkxj Kwievi c‡qvRbxq cwiKíbv MnY I Zvnv ev¯—evqb Kwi‡Z nB‡e		K| ¯—v¯—¨ I cwievi Kj¨vY gš¿Yvjq

		LvZ	**ev¯ewqbKvix KZc¶**
13.5	‡`‡ki `wi` Ask †h‡nZ cwi‡ek Ae¶‡qi cavb I Zwir wkKvi nq, ZvB ¯v¯¨i¶v I cwi‡ek AebqbRwbZ mgm¨v nB‡Z Zvnv†`i i¶v Kwievi wel‡q Dch³ e¨e¯v MnY Kwi‡Z nB‡e|	K|	¯v¯¨ I cwievi Kj¨vY gšYvjq

14| wk¶v I MY-m‡PZbZv t

14.1	cwi‡ek msµvš MY-m‡PZbZv mwói j‡¶¨ GKwU 5 ermi †gqv`x mgwšZ cKí cYqb Kwi‡Z nB‡e| cwi‡ek I eb gšYvj‡qi D‡`¨v‡M GB cKí MnxZ I ev¯ewqZ nB‡e| Z_¨, wk¶v cfwZ gšYvjq GB wel‡q mwPK mnvqZv c`vb Kwi‡e|	K| L| M|	cwi‡ek I eb gšYvjq wk¶v gšYvjq Z_¨ gšYvjq
14.2	wk¶v I cwk¶‡bi mKj chv‡q cwi‡ek msµvš welqw` cvV¨mPxi Ašf³ Kwi‡Z nB‡e|	K|	wk¶v gšYvjq
14.3	MYm‡PZbZv mwói D‡`¨v‡M gmwR‡`i Bgvg Ges ¯‹j K‡j‡Ri wk¶Ke›`mn mKj cKvi agxq Ges mvgwRK †bZe›` we‡klZt †¯"Qv‡mex msMVbmg‡ni †bZe›`‡K m¤ú³ Kwi‡Z nB‡e|	K| L| M| N|	ag gšYvjq Bmjvwg K dvD‡Ûkb mgvRKj¨vb gšYvjq wk¶v gšYvjq

15| weÁvb, chw³ I M‡elYv t

15.1	cwi‡ekm¤§Z I †UKmB chw³‡K j‡¶¨ iwLqv cwi‡ek `lY Z`viK I wbqšY †Rvi`vi Kivi c`‡¶c m¤ú‡K civgk c`vb Kwi‡Z nB‡e|	K| L|	weÁvb I chw³ wefvM weÁvb I chw³ msµvš M‡elYv cwZôvbmgn
15.2	wewfb M‡elYv cwZôv‡b cwi‡ek msi¶Y I Dbqb Ges m¤ú‡`i cwi‡ekm¤§Z e¨envi wbwðZ Kwievi j‡¶¨ M‡elYv Kvhµg I Dch³ chw³ D™vebgjK Kvhµg †Rvi`vi I Drmvwn Z Kwi‡Z nB‡e|	K| L|	mswkó gšYvjqmgn wewfb M‡elYv cwZôvb

	LvZ		ev¯—evqbKvix KZc¶
15.3	1986 mv‡j i RvZxq weÁvb I chw³ bxwZ‡Z M‡elYv I Dbq‡bi Rb¨ RvZxqfv‡e AMwaKvi wnmv‡e wPwýZ mKj †¶‡Î cwi‡ek MZ we‡ePbv GKwU Acwinvh Ask wnmv‡e ms‡hvRb Kwi‡Z nB‡e|	K| L|	weÁvb I chw³ wefvM weÁvb I chw³ mswkó I Ab¨vb¨ gš¿Yvjq/wefvM|
15.4	‡`‡ki mKj M‡elYv I Dbqb cwZôvb Zvnv‡`i M‡elYv †¶Îmg‡ni cwi‡ekMZ w`K we‡klfv‡e we‡ePbv Kwi‡e Ges Z`bhvqx ms‡kvabgjK e¨e¯v MnY Kwi‡Z nB‡e|	K| L| M|	weÁvb I chw³ wefvM mswkó mKj gš¿Yvjq/wefvM weÁvb I chw³ mswkó mKj M‡elYv I Dbqb cwZôvb

16| AvBbMZ KvVv‡gv t

16.1	cwi‡ek m¤úwKZ eZgvb AvBbmgn GKwU Avštgš¿Yvjq Kwgwdi gva¨‡g chv‡jvPbvceK c‡qvRbxq ms‡kva‡bi e¨e¯v MnY Kwi‡Z nB‡e|	K| L| M|	cwi‡ek I eb gš¿Yvjq AvBb I wePvi gš¿Yvjq Ab¨vb¨ mswkó gš¿Yvjq
16.2	GB Avštgš¿Yvjq Kwgwdi cwi‡ek msi¶Y I Dbq‡bi j‡¶¨ bZb c‡qvRbxq AvBb cYq‡bi †¶Î mgn wPwýZ Kwiqv mwb`ó mcwik †ck Kwi‡e|	K|	cwi‡ek I eb gš¿Yvjq
16.3	GLb nB‡Z bZb †h †Kvb AvBb cYq‡bi mgq mswkó gš¿Yvjq H AvBb cwi‡ek m¤§Z nIqv wbwðZ Kwi‡eb|	K|	mswkó gš¿Yvjqmgn

17| cwZôvbK KvVv‡gv t

17.1	Dcwiwjwl‡Z mKj gš¿Yvjq/wefvM Ges miKvix cwZôvbmg‡n wbR wbR AvIZvaxb mswkó Kvhµg cwi‡ek m¤§Zfv‡e ev¯evq‡bi Rb¨ h_vwewnZ e¨e¯v MnY Kwi‡e|	K|	mswkó gš¿Yvjq
17.2	cwi‡ek msi¶Y I Dbqb msµvš Kvhw` ev¯evq‡b †emiKvix †m±i I †emiKvix ms¯vmg‡ni cZ¨¶	K|	GbwRI welqK e¨‡iv

	LvZ		ev¯evqbKvix KZc¶
	AskMnY Drmwn Z I wbwðZ Kwi‡Z nB‡e		
17.3	cwi‡ek I eb gš¿Yvjq cwi‡ek msµvš ev¯evqb Kvhµg ev¯evq‡bi welq mgšq Kwi‡e|	K|	cwi‡ek I eb gš¿Yvjq
17.4	miKvi cav‡bi mfvcwZ‡Z GB Kvhµg ev¯vevq‡b w`K wb‡`kbv c`v‡bi D‡Ï‡k¨ GKwU RvZxq cwi‡ek KwgwU MwVZ nB‡e| msweó mKj gš¿Yvj‡qi gš¿xMY GB KwgwUi m`m¨ nB‡eb| cwi‡ek I eb gš¿Yvj‡qi mwPe GB KwgwUi m`m¨-mwPe nB‡eb GB KwgwUi mfv erm‡i AšZt GKevi Abwôz nB‡e|	K| L| M|	cavb gš¿xi Kvhvjq gš¿x cwil` wefvM cwi‡ek I eb gš¿Yvjq
17.5	†`‡ki mKj Dbqb cK‡í cwi‡ekMZ cfve wbi¡c‡bi e¨e¯v Kwievi †cw¶‡Z cwi‡ek I eb gš¿Yvjq Ges cwi‡ek Awa`ß‡ii KwiMix mvg_¨ I †jvKej ew× Kwi‡Z nB‡e| cwiKíbv cYq‡bi mv‡_ msweó KgKZv‡`i cwi‡ek msµvš cwk¶Y c`vb Kwi‡Z nB‡e| cKí mvicÎ I cKí `wj‡j cwi‡e‡ki cfve m¤ú‡K we¯wiZfv‡e D‡jL _wK‡Z nB‡e|	K| L| M|	cwi‡ek I eb gš¿Yvjq cwiKíbv Kwgkb msweó mKj gš¿Yvjq
17.6	cwi‡ek I eb gš¿Yvjq cwZ cvP erm‡i Aši †`‡k cwi‡ek Ae¯vi Dci GKwU Ae¯vbcÎ (Status Paper) cYqb, cKvk I weZiY Kwi‡e|	K|	cwi‡ek I eb gš¿Yvjq
17.7	fwel¨‡Z h_vmg‡q cwi‡ek I eb gš¿Yvjq c‡qvRb Abmv‡i cwi‡ek bxwZ cwieZb I cbt cYq‡bi Rb¨ h_vewnZ e¨e¯v MnY Kwi‡e Ges cwi‡ek msµvš ev¯evqb Kvhµ‡gi c‡qvRbxq cwieZb Kwi‡e|	K|	cwi‡ek I eb gš¿Yvjq

APPENDIX TWO

National Policy on the Environment, Malaysia

Malaysia is one of the fast moving developing countries that had made tremendous progress in social-economic arena as well as technological advancement within a short period. It has a great reputation in tourism business also. This uniqueness of having progress in industrialization and in tourism indicates that Malaysia should have an effective environment policy to ensure balance between economic growth and environment protection.. The cabinet approved national Policy of the Malaysia on 2 October 2002. This policy is also integrated with the vision 2020 of Malaysia.

Policy Statement

> ***For continuous economic, social and cultural progress and enhancement of the quality of life of Malaysians, through environmentally sound and sustainable development***

This environment policy statement refers that all development activities of Malaysia should put emphasis on the soundness and sustainability of the environment. So balance between development and environment issues are clearly emphasized and mentioned here.

Objective of the policy

This policy has targeted very few objectives to be achieved. As objectives are clearly mentioned in the policy, it is easier to follow and to implement the policy.

1. ***A clean, safe, healthy and productive environment for present and future generations.***

Environment is a property of present and future generation. All generations have equal right to take advantage and benefits from environment without harming the interest of other generation. Sustainable development also refers the utilization of present resources without harming the interest of the future generation. First objective of the policy refers the mutual balance of interest and responsibilities of the present generation with that of the future generation regarding environmental issues. This policy addressed the issue related with intergenerational equity but it does not address the issue related with intra-generational equity through its objective setting.

2. ***Conservation of the country's unique and diverse cultural and natural heritage with effective participation by all sectors of society.***

Each society or country has its own cultural heritage and natural heritage that are interdependent and interrelated. Therefore it is mandatory that these social and environmental forces should work in a convergent way. Second objective of the policy pointed out the necessity to address the mutual existence of cultural heritage and natural heritage. Moreover all cultural and environmental issues are the issues

that ask the involvement of the whole society. Therefore this policy mentions the obligation to ensure effective participation of all sectors of the society.

3. ***Sustainable lifestyles and patterns of consumption and production.***

Industrial production generates wastages that are directly related with environment pollution. But basically all sorts of production have direct or indirect involvement in environment pollution and degradation. On the other hand consumption has also similar effect on environment as the production has. It also true that consumption and production as well as its rate of increment are essential features of development. Therefore production and consumption cannot be forbidden totally rather there should have some mechanism to ensure more aggregate positive externalities than the negative externalities as a sequence of consumption and production pattern. The third objective of this policy suggested sustainable lifestyle and patterns of consumption and production.

Objectives of this policy are very specific in nature. Very wisely these objectives are chosen to address the environmental issues properly by protecting environment pollution and degradation as well as by keeping the environment productive. It also put emphasis on improving the lifestyle and living standard of the human by ensuring participation of all the sectors of the society. All the objectives are strategic but achievable. First two objectives are directly related with environment. In the third objective, emphasis is given on the factors that have great impact on the over all quality of the environment. Therefore objective of this policy is very much purpose oriented. No overlapping and vagueness is present in the stated objectives.

Principles

In the national policy on the environment there are eight principles to harmonies economic development goals with environmental imperatives. These principles are interrelated and mutually supporting.

1. ***Stewardship of the environment***
2. ***Conservation of nature's vitality and diversity***
3. ***Continuous improvement in the quality of the environment***
4. ***Sustainable use of natural resources***
5. ***Integrated decision making***
6. ***Role of the private sector***
7. ***Commitment and accountability***
8. ***Active participation in the environmental community***

Through these principles this policy refers the ways, means, tools to address the environment issues and problems. These principles express the notion of exercising respect and caring for the environment with highest moral and ethical standards; conserve natural ecosystem for integrating biodiversity and life style; continuous improvement of the quality and productivity of the environment; sustain the natural resource base and prevent the degradation of the environment. Principles of this policy also refers that to handle environment issues effectively all sectors of the society should have scope to take participation in decision-making process with

accountability and commitment. Principles of the policy also indicate that environment is a cross boundary event which asks cooperation among all countries. As principles are stated it is bit easier to understand the notion of the policy as well as the procedural intension of the rest of the policy to achieve the targeted goals.

Strategy

There are seven strategies to address the targeted objectives. These strategies are

1. ***Education and awareness***
2. ***Effective management of natural resources and the environment***
3. ***Integrated development planning and implementation***
4. ***Prevention and control of pollution and environmental degradation***
5. ***Strengthening administrative and institutional mechanisms***
6. ***Proactive approach to regional and global environmental issues***
7. ***Formulation and implementation of action plans.***

Strategies are the tools through which ultimate objectives will be achieved. In the environment policy of Malaysia eight strategies are identified. These strategies are designated as green strategies. These seven strategies are the key areas that will put a combined impact to achieve the objectives of this policy.

Education and awareness

- It is stated that understanding the concepts of environmentally sound and sustainable development will be promoted through formal and informal environmental education, training and information dissemination.
- Education curriculum at all level will be reviewed to ensure environment related multidisciplinary approach. Though non-formal education, direct involvement of social support groups and inculcating the positive environmental attitudes in family will be promoted.
- Methods and materials will be developed for education programs and school to tertiary institutions will be taken under coverage.
- To enhance the national capacity in related fields, interdisciplinary research will be made by establishing national centers of excellence.
- Through information technology, multi-media and other audio-visual methods concern information will be made available. Public and academic forums to discuss environmental and development issues will be encouraged. Environmental journalism and association of environmental journalists will be accorded recognition to strengthen the role of media in disseminating environmental information.
- Cooperative relations with the media, entertainment and advertising industries will be promoted to mobilize their experiences in shaping public behavior and consumption patterns.
- Environment and development issues will be integrated into the activities of groups including professional associations.
- Environment and development related man power training will be designed.

Environment and development awareness will be promoted through three basic approach; education, training and information dissemination. What will be incorporated and how these will create the impact on awareness development is mentioned here. On the other hand it is also mentioned that educational curriculum in all level will be targeted to incorporate environment related items. To anticipate the future environmental issues and to handle those issues in local capacity basis, research in concerned field in emphasized. To build root level consensus, role of family and other social groups are emphasized which is the approach of honoring the capacity of non-government institutions. Public-private-3rd sector collaboration will be made to make environmental information available to the people in a manner to network the capabilities of all sectors. This environment policy provides some specific guideline to the education policy that can be useful to make effective linkage between these two policies.

Effective management of natural resources

- With an intension to meet the people's needs and aspirations, environment and natural resources, particularly land, forests, biodiversity and water, will be protected and conserved.
- To serve as a guide to policy formulation and decision-making, a national inventory and audit of environment and natural resources will be maintained and regularly updated through effective monitoring system.
- Natural resource areas will be established and maintained as zones for the conservation and protection of indigenous flora and fauna and genetic resources.
- Taking due account of the current and future needs of the community, land-use planning and implementation shall be made providing high emphasis on land stability, the need for land conservation, land capabilities and carrying capacities. In that case resource mapping technique and geographical information system will be used.
- Special emphasis will be given to minimize land degradation such as soil erosion and degradation due to mining activities.
- Forests and their resources will be managed sustainably to ensure continued and sustainable economic benefits and social stability of communities inhabiting such areas.
- Long term national plan for water management shall be prepared through systematic and comprehensive inventory of existing and potential water resources.
- For river basin management and related developed projects, specific procedures for planning, including beneficial-use classification, coordination and monitoring measures, shall be incorporated to ensure sustainability.
- Seas, coastal zones, lakes, rivers, mangroves, wetlands, islands, sea grass, coral reefs shall be managed in an environmentally sound manner.
- Energy conservation and efficient use of energy will be ensured through appropriate pricing mechanisms, setting of efficiency standards, promoting technology transfer and providing consumer information.
- Use of cleaner fossil fuels, alternatives to fossil fuels and research in clean and renewable sources of energy will be encouraged.

- Measures will be taken to protect and conserve elements of the national historical, social and cultural heritage.

It is prescribed to execute national inventory and audit of environment and natural resources regularly. But there should have been specifically mentioned timeframe of after what interval this process should take place. Otherwise confusion may create which will introduce the scope of undermine the provision due to lack of specific timeframe.

For special focusing it is suggested to create zones to protect indigenous natural resources.

Land management is based on the intension to meet the demand of the present and future generation with a notion to maintain land stability, land capability and carrying capacity. Very specifically instrument like resource mapping technique and geographical information system is suggested here. But new arrival of technology makes the older version of technology obsolete. Therefore it is not wise to mention the technology should be used, specifically. This may create the nature of lack of flexibility of the policy.

For mining policy some objective guideline, to minimize land degradation, is prescribed in this environment policy. Here priority is given to put highest effort to prevent land from degradation rather to extract resources from mine.

For forests policy suggestive guideline is to ensure sustainable use of forests and its resources to make a balance between getting sustainable economic benefits and social stability of community inhabiting there.

In case of energy use, it is prescribed to set standard and to create provision for information dissemination. Here both use of fossil fuels and research on developing alternative of this fuel is encouraged.

Protection and conservation of historical, social and cultural heritage are described in this section / strategy which could have been discussed in elsewhere of the policy as these are not purely natural resources.

This section / strategy of the policy integrated the policy guideline for other national policies. Here correlation among monitoring mechanisms, information dissemination and making effective decision in mentioned.

Integrated development planning and implementation

- Environmental considerations and dimensions will be integrated into all stages of development, policies, programs, projects formulation and implementation and all aspects of decision making of national and local level.

- In assessing the viability of development projects or proposed changes in the use of natural resources, economic values reflecting environmental and social costs and benefits should be taken into consideration.

- In areas where intensive and extensive use of resources such as land, water and the marine environment is proposed development planning shall be on a regional basis rather than on a project basis, taking into consideration both economic development and environmental protection objectives.

Two very important environment supporting measures are prescribed in this strategy. One is to treat environment related issues as local phenomenon. It should be locally designed approach to consider environmental issues in development work; and the other is to put emphasis on environmental related social, economical considerations in developing and implementing any development projects or programs where natural resources are used.

Prevention and control of pollution and environmental degradation

- Environmental quality monitoring, surveillance programs and environmental auditing systems will be expanded and strengthened to support enforcement programs.
- Industry will be encouraged to develop policies that result in operations and products that have lower environmental impacts.
- Application of combination of corrective, preventive and precautionary measures, and control at source of major pollutants, and adoption of best practicable means for reduction of pollution, as well as application of techno-economic incentives like polluter-pays principle will be adopted as integrated approach of preventing and controlling pollution.
- Industries, especially amongst the larger firms, will be encouraged towards self-regulated and self-help in pollution control and prevention.
- Private initiatives will be encouraged to establish and implement environmental management system (EMS).
- Large entities of business will help small and medium scale (SMEs) enterprises through sharing experiences in environmental management system.
- Integrated technological, financial and innovative approaches to solving the pollution problems of SMEs will be explored, including options such as application of cleaner production technologies, provision of common treatment facilities, or relocation of such industries into industrial parks with such facilities.
- Collaborative approach with private sector and academia will be encouraged to promote research, development and EMS.
- Expenditure for environmental conservation will be encouraged to reduce mitigation cost.
- Integrated pest management practices, organic farming, environment friendly agriculture and aquaculture method will be promoted to minimize the use of pesticide and inorganic fertilizer.
- Non-motorized transport as well as less polluting and mass transportation system such as integrated urban mass transport and sea transport system will be promoted.
- Investments in integrated environmental infrastructure including sewerage, drainage and solid waste management systems will be encouraged.
- Polluted and degraded areas will be rehabilitated.

- Environmentally sound management systems will be developed and strengthened for hazards chemicals and toxic wastes, with particular reference to their storage, transportation over land or sea, treatment and disposal.
- The public and civil authorities will be promoted with a notion to introduce proper risk assessment techniques and procedures, safe operational practices, and the building-up of adequate emergency response capacity and readiness amongst industry.
- Highest priority will be given to technology transfer and research and development to encourage technical innovation in key areas such as waste minimization, recycling, recovery, treatment and safe disposal, new methods of tackling pollution in priority areas.

It is prudently decided to provide emphasis on effective enforcement of monitoring and evaluating programs.
To create initial agreement and to empower the major stakeholders, provision is created to make plan and to set standards by the industry.
As environment pollution and its protection is a continuous issue it should be addressed by corrective, preventive and precautionary measures.

As huge cost in involved in industrial waste management it is prescribed to take primary initiatives by the large firms which are operating in economic of scale. Small and medium firms will get voluntary support from large firs. Moreover SMEs will take collaborative measures to adopt environmental friendly practices.

Pollution problem can be addressed by encouraging cleaner production technology, provision of common treatment facilities, creating industrial park.

Policy guideline for agriculture policy is to promote integrated pest management and organic farming with environment friendly agriculture methods.

In case of transportation policy prescription of environment policy is to promote non-motorized transport, mass transport and sea transport.
Any sort of investment in environmental infrastructure is encouraged in this policy.

To address the toxic substance it is stated to develop and strengthen an environmentally sound management.

Public and civil authority will be engaged to ensure the compliance of standards regarding industrial waste management by every industry and to strengthen emergency response capacity of each industry.
Highest priority is given in the research and collaborative effort to handle this issue.

Strengthening Administrative and Institutional mechanism

- Integrated and effective cooperation and coordination among government sectors and between government and other sectors shall be encouraged in order to achieve efficient environmental management and protection.
- Coordinated effort will be established for effective and efficient implementation, monitoring and feedback.

- Relevant legislation and standards shall be reviewed regularly and revised to ensure the continued effectiveness and coordination of laws.
- Particular attention will be paid to effective enforcement.
- Ministries and government agencies will be encouraged to established mechanisms to ensure that environmental considerations are integrated into their development projects and activities.
- Efforts to promote environmental responsibility within the private sector will be encouraged, through their cooperation and active participation in environmental awareness and training programs.
- Each business or industry will be encouraged to formulate codes of conduct for self-monitoring, self-evaluating and self-auditing of environmental performance.
- Cooperation between government agencies and among all sectors and stakeholders shall be promoted for the implementation of environmental standards, dissemination of information, and the inculcation of environmentally responsible attitudes throughout the society.
- The environmental management capacity of all sectors shall be strengthened and enhanced by encouraging and supporting the establishment of centers of excellence in research and development ecological and environmental science, environmental technology, training and policy analysis.

Networking among government agencies and all other sectors are suggested to ensure the participation of every blocks of the society.

For all government agencies it is suggested to ensure that all development activities have environment considerations.

It is not clearly mentioned what are the administrative units that will be encouraged in implementing and formulating the environment policy.

Each business units are empowered to set their own standards and implementation mechanisms.

Moreover responsibilities of each administrative units are clearly defined therefore there is no scope of confusion and overlapping in the field and implementation level.

Proactive approach to regional and global environmental issues

- Malaysia will cooperate actively with other countries, particularly the ASEAN community of nations, and with relevant regional and international organizations, on global environmental concerns.
- Transboundary cooperation will be encouraged to protect environment from pollution and degradation through collaborative action and information dissemination.
- Malaysia will adopt a proactive approach in addressing global environmental issues.
- Malaysia will play an active part in developing regional and international agreements and initiatives to address global environmental problems.

- Malaysia will honor the obligations of Agenda 21 at national level, and support international cooperation with regard to its implementation.

It is prescribed to be committed to enhance the transboundary cooperation to handle environmental issues. Moreover it is suggested to take effective participation and initiatives to create international consensus to address environmental issues.

This policy reflects the intension of Malaysia to honor the Agenda 21.

Agenda 21 is a program run by the United Nations (UN) related to sustainable development. It is a comprehensive blueprint of action to be taken globally, nationally and locally by organizations of the UN, governments, and major groups in every area in which human's impact on the environment. The number *21* refers to the 21st century. The full text of Agenda 21 was revealed at the United Nations Conference on Environment and Development (Earth Summit), held in Rio de Janeiro on June 14, 1992, where 179 governments voted to adopt the program. The final text was the result of drafting, consultation and negotiation, beginning in 1989 and culminating at the two-week conference. In 1997, the General Assembly of the UN held a special session to appraise five years of progress on the implementation of Agenda 21 (Rio +5). The Assembly recognized progress as 'uneven' and identified key trends including increasing globalization, widening inequalities in income and a continued deterioration of the global environment. A new General Assembly Resolution (S-19/2) promised further action. The Johannesburg Plan of Implementation, agreed at the World Summit on Sustainable Development (Earth Summit 2002) affirmed UN commitment to 'full implementation' of Agenda 21, alongside achievement of the Millennium Development Goals and other international agreements. The Commission on Sustainable Development acts as a high level forum on sustainable development and has acted as preparatory committee for summits and sessions on the implementation of Agenda 21. The United Nations Division for Sustainable Development acts as the secretariat to the Commission and works 'within the context of' Agenda 21. Implementation by member states remains essentially voluntary. (wiki)

Formulation and implementation of action plans

- Action plans, with adequate resource support for their implementation, will be formulated.
- The implementation of this policy and its strategies will be monitored and reviewed by the National Development Council.

In this policy it is specifically mentioned that the whole policy and implementation should be evaluated and monitored by the National Development council with a view to ensure the feasible match between strategy formulated and resourced needed to implement those strategies.

Major features of environment policy of Malaysia

- Well set and clearly defined Objectives

- Principles are mentioned
- Guideline for prevention of environment pollution and degradation are given
- Identifying and addressing source factors
- Addressing the major environment elements
- Policy guideline regarding sectoral issues
- Policy guideline about integration with other national policies
- Policy guideline about integration with international treaties
- Policy guideline to address international environment related cooperation
- Policy guideline regarding renewable and non-renewable energy resources
- Policy guideline for maintaining and enhancing the productivity of environment
- Strategies to achieve the targeted goals
- Implementation guideline
- Administrative and Institutional Mechanism
- Monitoring mechanism
- Policy guideline to adopt continuous necessary change in the policy
- Policy guideline for supporting laws and rules
- Policy guideline to ensure networking and people's participation
- Policy guideline to ensure free flow of information
- Flexibility to adopt the change and to adopt the locality based approach
- Be fitting in content and context of the policy in the sense that this policy put highest emphasis on making coexistence and simultaneous improvement of economic development and environment quality and productivity.
- Language of this policy is lucid and unambiguous. It is not necessary to have deep knowledge and understanding on environmental issues and language to understand the instruction given in this policy.

APPENDIX THREE
National Policy on Environment, India

In India a largely agrarian feudal economy at the time of independence has been transformed into one based on a well-developed and highly diversified infrastructure that has immense potential for industrialization. The country now has resilient agriculture economy and is nearly self-sufficient in food production. Average life expectancy has risen from 33 years in 1951 to 60.8 years in 1994, and the death rate is decreased from 27.4 per thousand in 1951 to 9.2 in 1994. The birth rate has decreased from 40 per thousand in 1951 to 28.5. The country has made progress in economic sector as a result of new wave of liberalization set in motion in June 1991. Further, the government has made significant changes in environmental policy in the past two decades. Consequently, the quality of life has improved. (environmental policy and politics in India, RK Sapru).

India is among the few countries of the world that refers specially in their constitution to the need for environmental protection. Chapters on directives principles of state policy and fundamental duties explicitly enunciate the national commitment to protect and enhance the quality of the environment. Articles 48A and 51A(g) to the forty-second amendment laid the foundation for sustainable

development: the ‘state shall endeavor to protect and improve the environment and safeguard the forest and wildlife of the country’ (the Constitution of India 1994:79). It is the duty of the citizen ‘ to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures’ (The constitution of India 1994:81). The judicial interpretation of article 21 of the India Constitution has widened the scope of the right to life and personal liberty to include the protection of the environment as the duty of the state. The forty-second amendment also expanded the list of concurrent subjects (matters over which both the central and state governance have jurisdiction) by incorporating ‘population Control and Family Planning’ and bringing “Forests’ and ‘Protection of Wild Animals and Birds’ from the state list to the concurrent lists. The country also has a clearly articulated National Conservation Strategy and Policy Statement on Environment and Development (1992), Policy Statement for Abatement of Pollution (1992), National Forest Policy (1998), and National Water policy (1987) that are blueprints for state action to complement legal and other measures already taken. (environmental policy and politics in India, RK Sapru).

It is mentioned in the preamble of the national environmental policy of India that the National Environment Policy seeks to extend the coverage, and fill in gaps that still exist, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier policies though the present national policies for environmental management are contained in The National Forest Policy, 1988 National Conservation Strategy and Policy Statement on Environment and Development, 1992 and the Policy Statement on Abatement of Pollution, 1992. Some sector policies such as the Agriculture Policy, 2000 National Population Policy, 2000 National Water Policy, 2002; have also contributed towards environmental management. All of these policies have recognized the need for sustainable development in their specific contexts and formulated necessary strategies to give effect to such recognition.

This policy identified three foundational aspirations: First, that human beings should be able to enjoy a decent quality of life; second, that humanity should become capable of respecting the finiteness of the biosphere; and third, that neither the aspiration for the good life, nor the recognition of biophysical limits should preclude the search for greater justice in the world. To address these aspirations there is a need for balance and harmony between economic, social and environmental needs of the country which can be made through national environmental policy. On the other hand, to have a national environmental policy is a response to our national commitment to a clean environment, mandated in the Constitution in Articles 48 A and 51 A (g), strengthened by judicial interpretation of Article 21.

This policy briefly describes the key environmental challenges currently and prospectively facing the country, the objectives of environment policy, normative principles underlying policy action, strategic themes for intervention, broad indications of the legislative and institutional development needed to accomplish the strategic themes, and mechanisms for implementation and review. It has been prepared through a process of extensive consultation with experts, as well as diverse stakeholders, and this process is also documented.

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The dominant theme of this policy is that while conservation of environmental resources is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihoods from the fact of conservation, than from degradation of the resource.

Key environmental challenges: causes and impacts

The key environmental challenge is the nexus of environmental degradation with poverty in its many dimensions, and economic growth. Population growth, inappropriate technology and consumption choices, and poverty, leading to changes in relations between people and ecosystems, and development activities such as intensive agriculture, polluting industry, and unplanned urbanization are the identified as the main sources of environmental degradation. Basically environmental degradation took place only through deeper causal linkages, in particular, institutional failures, resulting in lack of clarity or enforcement of rights of access and use of environmental resources, policies which provide disincentives for environmental conservation (and which may have origins in the fiscal regime), market failures (which may be linked to shortcomings in the regulatory regimes), and governance constraints.

This policy mentioned that economic growth bears a dichotomous relationship to environmental degradation. Growth may result in "excessive" environmental degradation through use of natural resources and generation of pollution aggravated by institutional failures. On the other hand, economic growth permits improvement in environmental quality by making available the necessary resources for environmental investments, and generating societal pressures for improved environmental behavior, and institutional and policy change.

Emerging global environmental concerns such as climate change, stratospheric ozone depletion, and biodiversity loss are described as another major set of challenges for this policy.

This policy innovatively introduced the section of identifying the issues and challenge that need to be addressed as a response to the demand of the people and the society as a whole. A deep concern to ensure the protection of environment is reflected through identifying the Challenges of the policy.

Objectives of the policy

I. Conservation of Critical Environmental Resources

To protect and conserve critical ecological systems and resources, and invaluable natural and man-made heritage, which are essential for life support, livelihoods, economic growth, and a broad conception of human
well-being.

II. Intra-generational Equity: Livelihood Security for the Poor

To ensure equitable access to environmental resources and quality for all

sections of society, and in particular, to ensure that poor communities.

III. Inter-generational Equity

To ensure judicious use of environmental resources, to meet the needs and aspirations of the present and future generations

IV. Integration of Environmental Concerns in Economic and Social Development

To integrate environmental concerns into policies, plans, programs, and projects for economic and social development.

V. Efficiency in Environmental Resource Use

To ensure efficient use of environmental resources in the sense of minimizing adverse environmental impacts

VI. Environmental Governance

To apply the principles of good governance (transparency, rationality, accountability, reduction in time and costs, participation, and regulatory independence) to the management and regulation of use of environmental resources

VII. Enhancement of Resources for Environmental Conservation

To ensure higher resource flows, comprising finance, technology, management skills, traditional knowledge, and social capital, for environmental conservation through mutually beneficial multistakeholder partnerships

Environment policy of India targeted seven specific and well-defined objectives which are directly related with environment and its preservation. This policy emphasized on livelihood of the poor in respect to intergenerational equity to get benefits from environment. . But the objective 'environmental governance' overlaps the notion of some other objectives. One objective of this policy address the need of keeping and enhancing productivity of the environment.

Principles of the policy

1. Human Beings are at the Centre of Sustainable Development Concerns

Human beings are at the centre of concerns for sustainable development.
They are entitled to a healthy and productive life in harmony with nature.

2. The Right to Development

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

3. Environmental Protection is an Integral part of the Development Process

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

4. The Precautionary Approach

Lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

5. Economic Efficiency

This Principle requires that the services of environmental resources be given economic value, and such value to count equally with the economic
values of other goods and services, in analysis of alternative courses of action

i. Polluter Pays

Impacts of acts of production and consumption of one party may be visited on third parties who do not have a direct economic nexus with the original act. Such impacts are termed “externalities”. According to this principle externalities will be taken under economic consideration.

ii. Cost Minimization

Where the environmental benefits of a course of action cannot, for methodological or conceptual reasons, be imputed economic value, in any event the economic costs of realizing the benefits should be minimized.

iii. Entities with “Incomparable” Values

Significant risks to human health, life, and environmental life-support systems, besides certain other unique natural and man-made entities, which may impact the well-being, broadly conceived, of large numbers of persons, may be considered as ”Incomparable” in that individuals or societies would not accept these risks for compensation in money or conventional goods and services. A conventional economic cost-benefit calculus would not, accordingly, apply in their case, and such entities would have priority in allocation of societal resources for their conservation without consideration of direct or immediate economic benefit.

iv. Equity

The cardinal principle of equity or justice requires that human beings cannot be treated differently based on irrelevant differences between them.

6. Legal Liability

Civil liability for environmental damage would deter environmentally harmful actions, and compensate the victims of environmental damage. Conceptually, the principle of legal liability may be viewed as an embodiment in legal doctrine of the “polluter pays” approach, itself deriving from the principle of economic efficiency.

i. Fault Based Liability

In a fault based liability regime a party is held liable if it breaches a preexisting legal duty, for example, an environmental standard.

ii. Strict Liability

Strict liability imposes an obligation to compensate the victim for harm resulting from actions or failure to take action, which may not necessarily constitute a breach of any law or duty of care .

7. Public Trust Doctrine

The State shall protect the legitimate interest of a large number of people, or for matters of strategic national interest.

8. Decentralization

Decentralization involves ceding or transfer of power from a Central Authority to State and Local Authorities.

9. Integration

Integration refers to the inclusion of environmental considerations in sectoral policymaking, the integration of the social and natural sciences in environment related policy research, and the strengthening of relevant
linkages among various agencies at the Central, State, and Local Self-Government levels, charged with the implementation of environmental
policies.

10. Environmental Standard Setting

Environmental standards must reflect the economic and social development situation in which they apply. Setting environmental standards would involve several considerations, i.e. risks to human health, risks to other environmental entities, technical feasibility, costs of compliance, and strategic considerations.

11. Preventive Action

It is preferable to prevent environmental damage from occurring in the first place, rather than attempting to restore degraded environmental resources after the fact.

12. Environmental Offsetting

There is a general obligation to protect threatened or endangered species and natural systems that are of special importance to sustaining life, providing livelihoods, or general well-being.

In the principles of this policy it is apparent that human being is emphasized as an important element of the policy. Though human being is at the centre but all social and economic initiatives should have environmental considerations. Some sorts of command and control mechanisms is proposed through economic efficiency and legal liability. This policy wisely chose the principle to address ‘externalities’ as well as ‘equity’. Here the ‘environmental standard setting’ principle introduced the flexibility feature of the policy. Through ‘decentralization’ and ‘integration’ is notion to have all stakeholders’ participation to make the policy effective. ‘Precaution’ and ‘prevention’ are very important tools to protect environment from pollution and degradation.
It would be better if the mentioned principles bear the notion of continuous improvement in the quality of the environment, encouragement to private sector and 3rd sector participation, establishing commitment and accountability.

Strategies and Actions

In this policy some strategies are selected as tools or mechanisms to achieve the targeted objectives. Actions are the initiatives that are needed to make the strategy successful.

Regulatory reform

The regulatory regimes for environmental conservation comprise a legislative framework, and a set of regulatory institutions.

- ***Revisiting the policy and Legislative Framework***

Environment protection Act, 1986 and other environment related laws should be reviewed.

  - ***Action***
    - Institutionalize a holistic and integrated approach to the management of environmental and natural resources
    - Integrating environmental concerns in relevant sectoral and cross-sectoral policies, through review and consultation
    - Identify emerging areas for new legislation
    - Review the body of existing legislation in order to develop synergies among relevant statutes and regulations, eliminate obsolescence, and amalgamate provisions with similar objectives
    - Take steps to adopt and institutionalize techniques for environmental assessment of sector policies and programs
    - Ensure accountability of the concerned levels of Government (Centre, State, Local) in undertaking the necessary legislative changes in a defined time-frame

- ***Process related reforms***

Reduction of delays and levels of decision-making, realize decentralization of environmental functions, and ensure greater transparency and accountability.

  - ***Action***
    - In order to ensure faster decision making with greater transparency, and access to information, use of information technology based tools will be promoted, together with necessary capacity-building
    - State level agencies may be given greater responsibility for environmental regulation and management.
    - Mechanisms and processes would be set up to identify entities of “Incomparable Value” in different regions.

- ***Framework for Legal Action***

A judicious mix of civil and criminal processes and sanctions will be employed in the legal regime for enforcement, through a review of the existing legislation.

- ***Substantive Reforms:***

  - ✓ *Environment and Forests Clearances*

Environmental Impact Assessment (EIA) will be the principal basis for appraising and reviewing new projects.

  - ***Action***

- Encourage regulatory authorities, Central and State, to institutionalize regional and cumulative environmental impact assessments
- Specifically assess the potential for chemical accidents of relevant projects
- Due consideration to the quality and productivity of lands which are proposed to be converted for development activities
- Encourage clustering of industries and other development activities to facilitate setting up of environmental management infrastructure, as well as monitoring and enforcing environmental compliance.
- Restrict the diversion of dense natural forests and areas of high endemism of genetic resources, to non-forest purposes, only to site-specific cases of vital national interest.
- Formulate, and periodically update, codes of "good practices" for environmental management for different categories of regulated activities.

✓ *Coastal Areas*

Development activities in the coastal areas are regulated by means of the Coastal Regulation Zone notifications and Integrated Coastal Zone Management (ICZM) plans made under them.

- ***Action***
  - Revisit the Coastal Regulation Zone (CRZ) notifications to make the approach to coastal environmental regulation more holistic, and thereby ensure protection to coastal ecological systems, coastal waters, and the vulnerability of some coastal areas to extreme natural events and potential sea level rise.
  - Decentralize, to the extent feasible, the clearance of specific projects to State level environmental authorities, exempting activities,

✓ *Living Modified Organisms (LMOs)*

- ***Action***
  - Review the regulatory processes for LMOs so that all relevant scientific knowledge is taken into account, and ecological, health, and economic concerns are adequately addressed.
  - Periodically review the National Bio-safety Guidelines, and Bio-safety Operations Manual
  - Ensure the conservation of bio-diversity and human health when dealing with LMOs in transboundary movement in a manner consistent with the multilateral Bio-safety Protocol.

✓ *Environmentally Sensitive Zones*

Environmentally Sensitive Zones are based on "Incomparable Values" to provide special attention for their conservation.

- ***Action***
  - Identify and give legal status to Environmentally Sensitive Zones
  - Formulate area development plans for these zones on a scientific basis
  - Create local institutions with adequate participation for the environmental management of such areas

✓ *Monitoring of Compliance*

Weak enforcement of environmental compliance is attributed to inadequate technical capacities, monitoring infrastructure, and trained staff in enforcement institutions.

- ***Action***
  - Take measures, including capacity development initiatives to enable Panchayati Raj Institutions and urban local bodies to undertake monitoring of compliance with environmental management plans.
  - Develop feasible models of public-private partnerships to leverage financial, technical, and management resources of the private sector in setting up and operating infrastructure for monitoring of environmental compliance

✓ *Use of Economic Principles in Environmental Decision-making*

Costs associated with the degradation and depletion of natural resources are incorporated into the decisions of economic actors at various levels, to reverse the tendency to treat these resources as "free goods" and to pass the costs of degradation to other sections of society, or to future generations of the country. A judicious mix of incentives and fiats based regulatory instruments would be considered for each specific regulatory situation.

- ***Action***
  - Strengthen, including through capacity building, the initiatives, taken by the Central Statistical Organization in the area of natural resource accounting, with a view to its adoption in the system of national income accounts.
  - Develop and promote the use of standardized environmental accounting practices and norms in preparation of statutory financial statements for large industrial enterprises
  - Encourage financial institutions to adopt appropriate appraisal practices, so that environmental risks are adequately considered in the financing of projects.
  - Facilitate the integration of environmental values into cost-benefit analysis
  - Prepare and implement an action plan on the use of economic instruments for environmental regulation in specified contexts, including those relating to unsustainable production and consumption.
  - Consider creation of a National Environment Restoration Fund from the net proceeds of economic instruments, user fees for

access to specified natural resources, and voluntary contributions.

Enhancing and Conserving Environmental Resources

Perverse production and consumption practices are the immediate causes of environmental degradation, but an exclusive focus on these aspects alone is insufficient to prevent environmental harm.

- ✓ *Land Degradation*

The degradation of land, through soil erosion, alkali-salinization, water logging, pollution, and reduction in organic matter content has several proximate and underlying causes.

- o ***Action***
  - ➢ Encourage adoption of science-based, and traditional sustainable land use practices, through research and development, extension of knowledge, pilot scale demonstrations, and large scale dissemination, including farmer's training, and where necessary, access to institutional finance.
  - ➢ Promote reclamation of wasteland and degraded forestland, through formulation and adoption of multi-stakeholder partnerships
  - ➢ Prepare and implement thematic action plans incorporating watershed management strategies, for arresting and reversing desertification, and expanding green cover.
  - ➢ Promote sustainable alternatives to shifting cultivation where it is no longer ecologically viable
  - ➢ Encourage agro-forestry, organic farming, environmentally sustainable cropping patterns, and adoption of efficient irrigation techniques.

- ✓ *Desert Ecosystems*
  - o ***Action***
    - ➢ Intensive water and moisture conservation through practices based on traditional and science based knowledge
    - ➢ Enhancing and expanding green cover based on local species.
    - ➢ Reviewing the agronomic practices in these areas, and promoting agricultural practices and varieties, which are well adapted to the desert ecosystem.

- ✓ *Forests and Wildlife*
  - ➢ **Forest**

Forests conserve the soil, and prevent floods and drought. They provide habitat for wildlife and the ecological conditions for maintenance and natural evolution of genetic diversity of flora and fauna. They are the homes of traditional forest dependent communities. They yield timber, fuel wood, and other forest produce, and possess immense potential for economic benefits, in particular for local communities, from sustainable eco-tourism. Disempowerment has led to the forests becoming open

access in nature, leading to their gradual degradation in a classic manifestation of the "tragedy of the commons".

- ***Action***
  - Give legal recognition of the traditional entitlements of forest dependant communities
  - Formulate an innovative strategy for increase of forest and tree cover
    - Implementation of multi-stakeholder partnerships with clearly defined obligations and entitlements for each partner, following good governance principles
    - Rationalization of restrictions on cultivation of forest species outside notified forests, to enable farmers to undertake social and farm forestry where their risk-return-term profiles are more favorable than cropping
    - Universal adoption of community based practices
    - Focus public investments on enhancing the density of natural forests, mangroves conservation
  - Formulate an appropriate methodology for reckoning and restoring the environmental values of forests
  - Formulate and implement a "Code of Best Management Practices" for dense natural forests
  - Denotify Bamboo and similar other species as 'Forest Species' under the Forest Conservation Act, to facilitate their cultivation outside notified forests, and encourage their productive utilization in economic activities.
  - Promote plantation of only such species which are conducive to the conservation and sustainability of given ecosystems.

- **Wildlife**

The status of wildlife in a region is an accurate index of the state of ecological resources. Several charismatic species of wildlife embody "Incomparable Values", and at the same time, comprise a major resource base for sustainable eco-tourism.

- ***Action***
  - Expand the Protected Area (PA) network of the country, including Conservation and Community Reserves, to give fair representation to all bio-geographic zones of the country.
  - Revisit the norms, criteria and needs of data for placing particular species in different schedules of the Wildlife Protection Act.
  - Formulate and implement programs for conservation of endangered species outside protected areas, while reducing the scope for man-animal conflict.
  - Empower, build capacities, and facilitate access to finance and technology, for local people, in particular tribal, who are relocated from PAs, or live in the fringe areas, for provision of ecotourism services in the PAs.

- Paralleling multi-stakeholder partnerships for afforestation, formulate and implement similar partnerships for enhancement of wildlife habitat
- Promote site-specific eco-development programs in fringe areas of PAs, to restore livelihoods and access to forest produce by local communities, owing to access restrictions in PAs.
- Strengthen capacities and implement measures for captive breeding and release into the wild, identified endangered species.
- Review and tighten the provisions of relevant legislation to enhance their deterrence.
- Ensure that human activities on the fringe areas of PAs do not degrade the habitat or otherwise significantly disturb wildlife.

✓ *Biodiversity, Traditional Knowledge, and Natural Heritage*

Conservation of genetic diversity, is crucial for development of improved crop varieties resistant to particular stresses, new pharma products, etc., apart from ensuring the resilience of ecosystems. Traditional Knowledge (TK), referring to ethno-biology knowledge possessed by local communities, is the basis of their livelihoods, and also a potent means of unlocking the value of genetic diversity through reduction in search costs.

- ***Action***
  - Strengthen the protection of areas of high endemism of genetic resources ("biodiversity hot spots")
  - Pay explicit attention to the potential impacts of development projects on biodiversity resources and natural heritage.
  - Enhance ex-situ conservation of genetic resources in designated gene banks across the country.
  - Genetic material of threatened species of flora and fauna must be conserved on priority.
  - There is need to formulate an appropriate system for Prior Informed Consent and Fair and Equitable Benefit sharing in respect of biological material and traditional knowledge of use of such biological material to enable the country and local communities respectively to derive economic benefits from providing access.

✓ *Freshwater Resources*

The freshwater resources comprise the river systems, groundwater, and wetlands. Each of these has a unique role, and characteristic linkages to other environmental entities.

- **River Systems**

India's river systems typically originate in its mountain eco-systems, and deliver the major part of their water resources to the populations in the plains.

- ***Action***
  - Promote research in glaciology to evaluate the impacts of climate change on glaciers and river flows.

- Promote integrated approaches to management of river basins by the concerned river authorities, considering upstream and downstream inflows and withdrawals by season
- Consider and mitigate the impacts on river and estuarine flora and fauna of multipurpose river valley projects, power plants, and industries.
- Consider mandating the installation of water saving closets and taps in the building bye-laws of urban centers, and other available regulatory mechanisms.
- Integrate conservation and wise use of wetlands into river basin management involving all relevant stakeholders
- Incorporate a special component in afforestation programs for afforestation on the banks and catchments of rivers and reservoirs to prevent soil erosion and improve green cover.

Groundwater

The water table has been falling rapidly in many areas of the country in recent decades. This is largely due to withdrawal of groundwater for agricultural, industrial, and urban use, in excess of annual recharge.

- ***Action***
  - Take explicit account of impacts on groundwater
  - Promote efficient water use techniques, such as sprinkler or drip irrigation, among farmers.
  - Ensure availability of ground water potential maps through a designated institution.
  - Support practices of rain water harvesting and artificial recharge and revival of traditional methods
  - Mandate water harvesting and artificial recharge in all new constructions
  - Prepare and implement a comprehensive strategy for regulating use of ground water by large industrial and commercial establishments
  - Support R&D in cost effective techniques suitable for rural drinking water projects for remedial measures and removal of arsenic fluoride, and other toxic substances
  - Improve productivity per unit of water consumed in industrial processes, by making water assessments and water audits mandatory in identified industries and utilities.
  - Suitable sites for dumping the toxic waste material may be identified and remedial measures may be taken to prevent the movement of the toxic waste in the ground water.
  - The optional utilization of fertilizers, pesticides and insecticides should be encouraged for improving the water quality.

Wetlands

Wetlands provide numerous ecological services. They provide habitat to aquatic flora and fauna, as well as numerous species of birds, including
migratory species.

- ***Action***
  - Set up a legally enforceable regulatory mechanism for identified valuable wetlands
  - Formulate conservation and prudent use strategies for each significant catalogued wetland, with participation of local communities, and other relevant stakeholders.
  - Formulate and implement eco-tourism strategies for identified wetlands through multi-stakeholder partnerships
  - Take explicit account of impacts on wetlands of significant development projects during the environmental appraisal of such projects
  - Consider particular unique wetlands as entities with "Incomparable Values"
  - Integrate wetland conservation, including conservation of village ponds and tanks, into sectoral development plans for poverty alleviation and livelihood improvement
  - Promote traditional techniques and practices for conserving village ponds.

✓ *Mountain Ecosystems*

Mountain ecosystems play a key role in providing forest cover, feeding perennial river systems, conserving genetic diversity, and providing an immense resource base for livelihoods through sustainable tourism.

- ***Action***
  - Adopt appropriate land use planning and watershed management practices for sustainable development of mountain ecosystems.
  - Adopt "best practice" norms for infrastructure construction in mountain regions to avoid or minimize damage to sensitive ecosystems and despoiling of landscapes.
  - Encourage cultivation of traditional varieties of crops and horticulture by promotion of organic farming
  - Promote sustainable tourism through adoption of "best practice" norms for tourism facilities
  - Take measures to regulate tourist inflows into mountain regions
  - Consider particular unique mountain scapes as entities with "Incomparable Values"

✓ *Coastal Resources*

Coastal environmental resources comprise a diverse set of natural and manmade assets, including mangroves, coral reefs, estuaries, coastal forests, genetic diversity, sand dunes, geomorphologies, sand beaches, land for agriculture and human settlements, coastal infrastructure, and heritage sites.

- ***Action***
  - Mainstream the sustainable management of mangroves into the forestry sector regulatory regime

- Disseminate available techniques for regeneration of coral reefs, and support activities based on application of such techniques.
- Explicitly consider sea-level rise and vulnerability of coastal areas to climate change and geological events, in coastal management plans, as well as infrastructure planning and construction norms.
- Adopt a comprehensive approach to Integrated Coastal Management
- Develop a strategy for strengthening regulation, and addressing impacts, of ship-breaking activities on human health, and coastal and near marine resources.

✓ *Pollution Abatement*

Pollution is the inevitable generation of waste streams from the production and consumption of anything. Pollution directly impacts the quality of the receiving medium, i.e. air, water, soil, or electromagnetic spectrum. The impacts of pollution may differentially impact the poor, or women, or children, or developing regions, who may also have relatively low contributions to its generation, and accordingly the costs and benefits of abatement may have important implications for equity.

- **Air Pollution**

Air pollution may have adverse impacts on human health, as well the health of other living entities, manmade heritage, and life-support systems, such as global climate.

- ***Action***
  - Take an integrated approach to energy conservation and adoption of renewable energy technologies, including hydropower
  - Accelerate the national programs of dissemination of improved fuel-wood stoves, and solar cookers, suited to local cooking practices and biomass resources.
  - Strengthen the monitoring and enforcement of emission standards for both point and non-point sources.
  - Prepare and implement action plans for major cities for addressing air pollution
  - Formulate a national strategy for urban transport to ensure adequate investment, public and private, in low pollution mass transport systems.
  - Promote reclamation of wastelands by energy plantations for rural energy through multi-stakeholder partnerships
  - Strengthen efforts for partial substitution of fossil fuels by bio-fuels, through promotion of biofuels plantations, promoting relevant research and development

- **Water Pollution**

- ***Action***
  - Develop and implement public-private partnership models for setting up and operating effluent and sewage treatment plants.

- Prepare and implement action plans for major cities for addressing water pollution, comprising regulatory systems
- Take measures to prevent pollution of water bodies from other sources, especially waste disposal on lands.
- Enhance capacities for spatial planning among the State and Local Governments, with adequate participation by local communities, to ensure clustering of polluting industries to facilitate setting up of common effluent treatment plants
- Promote R&D in development of low cost technologies for sewage treatment at different scales
- Take explicit account of groundwater pollution in pricing policies of agricultural inputs, especially pesticides, and dissemination of agronomy practices.
- Encourage Integrated Pest Management (IPM) and use of biodegradable pesticides.

- **Soil Pollution**

- ***Action***
  - Develop and implement viable models of public-private partnerships for setting up and operating secure landfills, incinerators, and other appropriate techniques for the treatment and disposal of toxic and hazardous waste, both industrial and biomedical
  - Survey and develop a national inventory of toxic and hazardous waste dumps, and an online monitoring system for movement of hazardous wastes.
  - Strengthen the legal arrangements and response measures for addressing emergencies arising out of transportation, handling, and disposal of hazardous wastes, as part of the chemical accidents regime.
  - Strengthen the capacities of local bodies for segregation, recycling, and reuse of municipal solid wastes
  - Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials.
  - Promote organic farming of traditional crop varieties through research in and dissemination of techniques
  - Promote biodegradable and recyclable substitutes for non-biodegradable materials, and develop and implement strategies for their recycle, reuse
  - Develop and enforce regulations and guidelines for management of e-waste, as part of the hazardous waste regime.
  - Promote, through incentives, removal of barriers, and regulation, the beneficial utilization of generally non-hazardous waste streams such as fly ash, bottom ash, red mud, and slag, including in cement and brick making, and building railway and highway embankments.

- **Noise Pollution**

- ***Action***

- Make appropriate distinctions between different environments in terms of setting ambient noise standards
- Distinguish between noise standards in the context of occupational exposure (with protection measures), and environmental exposure to third parties.
- Formulate noise emissions norms (e.g. loudspeaker, automobile horns, fireworks ratings) appropriate to various activities
- Include ambient noise as among the environmental quality parameters to be routinely monitored in specified urban areas.
- Encourage dialogue between State/Local Authorities and religious/community representatives on the adoption of enforceable durations, timings, and use of loudspeakers/fireworks, etc.

✓ *Conservation of Manmade Heritage*

Manmade heritage reflects the prehistory, history, ways of living, and culture, of a locality. In India such heritage is at the core of national identity. Considerable economic value, and livelihoods may be derived from conservation of manmade heritage and their sustainable use, through realization of their tourism potential.

o ***Action***

- In setting ambient environmental standards, especially for air quality, the potential impacts on designated heritage sites must be taken into account.
- Heritage sites considered to have "Incomparable Values" would merit stricter standards than otherwise comparable situations, and particular attention should be paid to monitoring and enforcement of environmental standards in their case.
- Impacts on designated heritage sites must be considered at the stage of developing the terms of reference for environmental impact assessments of projects

✓ *Climate Change*

Climate change, resulting from anthropogenic emissions of a suite of gases (called "greenhouse gases" or GHGs) due to fossil fuel use, certain agricultural and industrial activities, and deforestation, leading to their increasing concentrations in the atmosphere, has the potential, over the next few generations, to significantly alter global climate.

o ***Action***

- Adherence to the principle of common but differentiated responsibilities and respective capabilities of different countries in respect of both mitigation of GHGs, and adaptation measures.
- Reliance on multilateral approaches
- Equal per-capita entitlements of global environmental resources to all countries.
- Over-riding priority of the right to development.

- Identify key vulnerabilities of India to climate change, in particular impacts on water resources, forests, coastal areas, agriculture, and health.
- Assess the need for adaptation to future climate change, and the scope for incorporating these in relevant programs
- Encourage Indian Industry to participate in the Clean Development Mechanism (CDM) through capacity building for identifying and preparing CDM projects, including in the financial sector.
- Participate in voluntary partnerships with other countries both developed and developing, to address the challenges of sustainable development and climate change

Environmental Standards, Management Systems, Certification, and Indicators

✓ *Environmental Standards:*

Environmental Standards refer both to the acceptable levels of specified environmental quality parameters at different categories of locations ("ambient standards"), as well as permissible levels of discharges of specified waste streams by different classes of activities ("emission standards").

- ***Action***
  - Set up a permanent machinery comprising experts in all relevant disciplines to review notified ambient and emissions standards in the light of new scientific and technological information
  - Strengthen the testing infrastructure and network for monitoring ambient environmental quality

Environmental Management Systems, Ecolabeling and Certification

Environmental Management Systems (EMS), such as ISO 14000, by requiring the adoption of standardized environmental management practices, documenting their actual use, and credible third party verification of the fact, may significantly ease the public burden of monitoring and enforcement of prescribed emissions standards. On the other hand, their adoption may involve transaction costs, which, for small and medium enterprises may be significant in relation to their total investment. Global harmonization of EMS, however, is a safeguard against adoption of arbitrary national EMS regimes to serve as non-tariff barriers.

- ***Action***
  - Encourage industry associations to promote the adoption of ISO 14000 among their members, through provision of technical and training support.
  - Encourage adoption of EMS through purchase preference for ISO 14000 goods and services for Government procurement, except for items reserved for the small-scale sector at any given time.
  - Formulate "Good Practice Guidelines" for ecolabels to enhance their scientific basis, transparency, and requirements of participation.

- Promote “good practices” norms in all relevant sectors to conserve natural resources and reduce adverse environmental impacts

Clean Technologies and Innovation

Clean technologies, as distinct from “end-of-pipe” abatement technologies minimize the generation of waste streams in the production processes and utilize waste from other consumption goods and production processes, rather than treating the waste after generation.

- ***Action***
  - Encourage capacity building in the financial sector for appraising clean technology switchover project proposals.
  - Set up a mechanism to network technology research institutions in the country; and promote dissemination of new technologies developed both in India and abroad.
  - Consider use of revenue enhancing fiscal instruments to promote shifts to clean technologies in both existing and new units.
  - Promote adoption of clean technologies by industry, in particular in the small and medium sector, through regulatory and fiscal measures, and standards setting.

Environmental Awareness, Education, and Information

Enhancing environmental awareness is essential to harmonize patterns of individual behavior with the requirements of environmental conservation. This would minimize the demands placed on the monitoring and enforcement regimes; in fact, large-scale non-compliance would simply overwhelm any feasible regulatory machinery.

- ***Action***
  - Develop and operate an online, real time, publicly accessible environmental information system to provide all relevant information on key environmental resources and parameters
  - Promote the use of Remote Sensing data to provide valuable inputs on the extent and quality of forests, wildlife habitats, biodiversity, wastelands, wetlands, groundwater, deserts, rivers, etc., and monitor pollution and its impacts.
  - Mainstream scientifically valid environment content in the curricula of formal education, at primary, secondary, tertiary, and professional levels.
  - Special mid-career training programs may be conducted for groups with special responsibilities
  - Prepare and implement a strategy for enhancing environmental awareness among the general public, and special groups through diverse media catering to the different target groups.

Partnerships and Stakeholder Involvement

- ***Action***
  - Public-Community Partnerships, by which public agencies and local communities cooperate in the management of a given environmental resource

- Public-Private Partnerships, by which specified public functions with respect to environmental management are contracted out competitively to private providers, e.g. monitoring of environmental quality.
- Public-Community-Private Partnerships, in terms of which the partners assume joint responsibility for a particular environmental function
- Public-Voluntary Organization Partnerships, similar to public-private partnerships, in respect of functions in which voluntary organizations may have a comparative advantage over others, the voluntary organizations, in turn, being selected competitively, e.g. environmental awareness raising.
- Public-Private-Voluntary Organization Partnerships, in which the provision of specified public responsibilities is accomplished on competitive basis by the private sector, and the provision is monitored by competitively selected voluntary organizations, e.g. "Build, Own, Operate" sewage and effluent treatment plants.
- It is also essential that all partnerships are realized through, and are carried out in terms of the principles of good governance
- Youth's strength needs to be harnessed and channelised in protection and conservation of environment. They also need to be involved in relevant stakeholder participation.

Capacity Building

- ***Action***
  - Review the present institutional capacities at the Central and State levels, in respect of enforcement of environmental laws and regulations.
  - Prepare and implement suitable programs for enhancement of the capacities, as required.
  - Incorporate in all environmental programs a capacity development component, with sufficient earmarked funds.
  - Ensure continuous up gradation of knowledge and skills of the scientific and technical personnel involved in environmental management in public institutions at all levels.

Research and Development

Key areas of research are as follows (not in order of priority, which is changeable over time):

-Taxonomies of living natural resources.

-Research leading to better understanding of ecological processes and pathways.

-Research which provides direct inputs to policy making.

-R&Din technologies for environmental management and clean production.

- ***Action***
  - Periodically identify and prioritize areas for research.
  - Establish a research program in priority areas within the Government, with expected outputs clearly specified.

- Encourage research in priority areas outside the Government, with necessary financial and institutional support.

International Cooperation

- ***Action***

  - Avail of multilateral and bilateral cooperation programs, for capacity building for environmental management, particularly in relation to commitments under multilateral instruments.
  - Participate in mechanisms and arrangements under multilateral agreements for enhancing flows of resources for sustainable development.
  - Provide assistance to other developing countries, in particular for scientific and technical capacity building for environmental management.

Review of the Policy

The environmental issues that are salient as of now may evolve over time, and new ones may take their place. Scientific understanding of environmental matters would advance rapidly. Changes in economic structure, technologies, resource availability, in each case nationally as well as globally, are likely, as are evolution of global environmental regimes, and norms arising from jurisprudence.

- ***Action***
  - Undertake consultations every three years with groups of diverse stakeholders
  - In the third of the three-year reviews, undertake a more comprehensive examination of the scientific and policy understanding of environmental issues, redefine the Objectives and Principles, and recast the Strategic Themes for Action. Anew National Environment Policy should be the outcome.

Review of Implementation

Any policy is only as good as its implementation. The National Environment Policy outlines a significant number of new and continuing initiatives for enhancing environmental conservation. These require the coordinated actions of diverse actors, for the major part organized and stimulated by one or more public agencies.

The Cabinet or a nominated Committee of the Cabinet may be requested to review the implementation of the National Environment Policy, once a year, within three months from the close of the previous fiscal year. The findings of the review should be publicly disclosed, so that stakeholders are assured of the seriousness of the Government in ensuring implementation of the Policy.

Process of Formulation of this Policy

The preparation of this Policy has involved inputs and consultations with diverse experts, and stakeholders.

Major features of environment policy of India

- Well set and clearly defined Objectives
- Principles are mentioned
- Guideline for prevention of environment pollution and degradation are given
- Identifying and addressing source factors
- Addressing the major environment elements
- Policy guideline regarding sectoral issues
- Policy guideline about integration with other national policies
- Policy guideline about integration with international treaties
- Policy guideline to address international environment related cooperation
- Policy guideline regarding renewable and non-renewable energy resources
- Strategies to achieve the targeted goals
- Implementation guideline
- Administrative and Institutional Mechanism
- Monitoring mechanism
- Policy guideline to adopt continuous necessary change in the policy
- Policy guideline for supporting laws and rules
- Policy guideline to ensure networking and people's participation
- Policy guideline to ensure free flow of information
- Flexibility to adopt the change and to adopt the locality based approach
- Policy guideline for addressing environment related negative externalities.
- Be fitting in content and context of the policy in the sense that this policy put highest emphasis on making coexistence and simultaneous improvement of economic development and environment quality and productivity with a notion to put highest emphasis on human and poverty reduction as well as right of the poor.
- Language of this policy is lucid and unambiguous. It is not necessary to have deep knowledge and understanding on environmental issues and language to understand the instruction given in this policy. Moreover this policy is more descriptive in nature which helps common people to understand the notion and approach of the policy.
- Every section or part of this policy is started with a descriptive introduction. Necessary definition, information and notion is clearly mentioned in this introduction to eliminate confusion and to establish clear understanding.
- Environmental policy of India clearly described the instruments it suggested to address the environmental issues.