Department of Environment
Ministry of Environment and Forests
Government of the People's Republic of Bangladesh

NATIONAL SUSTAINABLE DEVELOPMENT STRATEGY (NSDS)

BANGLADESH

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Disclaimer

The Department of Environment, the Ministry of Environment and Forests of Government of the People's Republic of Bangladesh has prepared the National Sustainable Development Strategy (NSDS) for Bangladesh. The United Nations Environment Programme (UNEP), Bangkok has provided financial and technical support. The formulation process has incorporated consultative and participatory approaches which have begun through a two-day inception cum training workshop in Dhaka in 2007. The guideline used for preparation of the NSDS for Bangladesh was developed by UNEP. This guideline has been taken as primary guiding document which defined the principles, functions, role and elements of NSDS. It has also suggested process in managing the sustainable development polices and actions.

The vision of the Bangladesh NSDS is to "ensure sustained economic growth, environmental protection and social justice which implies improvement of livelihood options of the people, reduction of poverty; ensuring wise use of natural resources, good governance and people's participation". The vision has been developed through consultative process and finalized during the national consultation attended by the officials of the government ministries, departments and agencies, and non-government and academicians. The vision of the NSDS has been reviewed and approved by the Steering Committee of the NSDS chaired by the Secretary, Ministry of Environment and Forest. It is anticipated that the National Sustainable Development Strategy will be implemented by 2030 and country will reach to a path of sustainable development.

The National Sustainable Development Strategy has identified Four Strategic Priority Areas (SPAs) along with three cross-cutting areas in achieving stated vision of the NSDS and facilitate in addressing long-term sustainability issue of critical areas. Key objective of the identified Strategic Priority Areas and sustainability of the critical areas those will be facilitated through the National Sustainable Development Strategy (NSDS) are given below.

Sustained Economic Growth

Accelerated growth has been suggested as a key development strategy as well as poverty reduction for Bangladesh. It is expected that implementation of different strategies suggested under sustained economic growth will ensure and sustained accelerated growth, as identified in the several national policies and strategies, without compromising environmental sustainability and enhancing social equity. It will also facilitate poverty reduction through employment generation, bring effective utilization of energy and mineral resource, greening manufacturing industries, promotion of trade including export, and enhance remittance through creating job at international market.

Agriculture and Rural Development

Several strategies suggested under agriculture and rural development is to provide a direction to search for possible ways and means in the agricultural sector including fisheries and livestock as they will remain the engine for overall economic growth and support rural development. Key objective of this Strategic Priority Area is to exploit agricultural for ensuring economic emancipation with special focus on rural development and food security for the growing populace without disturbing and degrading environmental and ecological sustainability.

Social Security and Protection

Rights of the citizens to quality health and sanitation services, minimum shelters for all including access to services and utilities, quality education, creating social safety net, gender equity and empowerment of women, child rights and special services for children, aged and people needs special assistance are key areas addressed under this session. These are the critical indicators for demonstrating growth of social development. Creating provisions, ensuring access and maintaining quality services are key challenges to meet growing demand of large population at present and future.

Environment and Natural Resource Management

Primary objective of this Strategic Priority Area is to ensure environmental protection for humans, ecosystems and resources which implies to promote the conservation, augmentation and efficient utilization of the natural resources. It covers land, forest,

water, bio-diversity, and pollution control as well as climate change as one of the most important issue. It appears that without addressing climate change overall sustainable development can not be achieved. The Bangladesh Climate Change Strategy and Action Plan , 2008 prepared by the Ministry of Environment and Forest can be treated as guiding document to address climate change issue in achieving sustainable development of Bangladesh.

Three important cross cutting areas have been identified to support Four Strategic Priority Areas of the National Sustainable Development Strategy (NSDS). These cross-cutting areas are Governance, Human Resource Development and Management, and Gender.

The NSDS Report has brought forward the challenges in the path to sustainable development faced by Bangladesh. In light of the challenges, the strategic priority areas were identified. The areas of challenge for attaining the national sustainable development goals also include the goals set out in the MDGs.

In order to bring about sustainable development the general strategies set out are:

- Creating an economy that will have continued growth and benefit will penetrate at all level to ensure sustainable development;
- Enhance institutional capacity and bring necessary changes at institutional at institutional level as appropriate for sustainable development;
- Creating a policy and regulatory framework to create an enabling condition and support sustainable development; and
- Creating a knowledge base for sustainable development.

The conceptual framework and idea behind analysis was governed by the guideline prepared by the UNEP. The questions tried to answer in the NSDS were a) what is sustainable development at the national context?, b) where are we now?, c) where do we want to go?, and d) how do we get there? The NSDS has described the existing situation, objectives, targets and key indicators for each strategic priority area.

Acknowledgement

The Department of Environment, Ministry of Environment and Forests (MoEF), The Government of the People's Republic of Bangladesh wishes to thank the distinguished individuals, researchers, authors, experts, reviewers and institutions who have actively participated in the project and made valuable contribution in formulating the National Sustainable Development Strategy (NSDS) for Bangladesh. These individuals, researchers, authors, experts, reviewers and institutions cover a wide range of officials of various government departments, intergovernmental agencies, non-governmental organizations, and voluntary organizations. This NSDS report was prepared through consultation processes and workshop and valuable feedback from the participants.

Abbreviations and Acronyms

ABCN	Area Based Community Nutrition
AGOA	Africa Growth & Opportunity Act
BBS	Bangladesh Bureau of Statistics
BCAS	Bangladesh Centre for Advanced Studies
BFDC	Bangladesh Fisheries Development Corporation
BFRI	Bangladesh Fisheries Research Institute
BFSCD	Bangladesh Fire Service and Civil Defense
BWDB	Bangladesh Water Development Board
CBD	Convention on Biological Diversity
CBN	Cost of Basic Needs
CNG	Compressed Natural Gas
CNU	Community Nutrition Unit
DCI	Direct Calorie In-take
DoE	Department of Environment
DoF	Department of Fisheries
DPHE	Department of Public Health Engineering
ECA	Ecologically Critical Area
FDI	Foreign Direct Investment
FFE	Food for Education
GBM	Ganges-Brahmaputra-Meghna
GDP	Gross Domestic Product
HCR	Headcount Ratio
HDI	Human Development Index
HNP	Health, Nutrition and Population
HYVs	High Yielding Varieties
ICZMP	Integrated Coastal Zone Management Plan
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature
IWRM	Integrated Water Resources Management
JPOI	Johannesburg Plan of Implementation
LGED	Local Government Engineering Department
LPL	Lower Poverty Line
MDG	Millennium Development Goals
MEA	Multilateral Environmental Agreement
MOA	Ministry of Agriculture
MOEF	Ministry of Environment and Forest
MOFDM	Ministry of Food and Disaster Management
MOL	Ministry of Land

MOWR	Ministry of Water Resources
NAP	National Action Programme for Combating Desertification in Bangladesh
NAPA	National Adaptation Programme of Action
NBSAP	National Bio-diversity Strategy and Action Plan
NCB	National Coordinating Body
NCS	National Conservation Strategy
NCSD	National Commission on Sustainable Development
NCSA	National Capacity Self Assessment
NEMAP	National Environmental Management Action Plan
NORAD	Norwegian Agency for Development Cooperation
NSDS	National Sustainable Development Strategy
NSDSAP	National Sustainable Development Strategy and Action Plans
NWMP	National Water Management Plan
NWFP	Non-wood Forest Products
PDB	Power Development Board
PRSP	Poverty Reduction Strategy Paper
SME	Small and Medium Enterprises
UNCED	UN Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNEP RRC.AP	UNEP Regional resource Centre for Asia and Pacific
UNFCCC	United Nations Framework Convention on Climate Change
UPL	Upper Poverty Line
VET	Vocational Education and Training
VGD	Vulnerable Group Development
WARPO	Water Resources Planning Organization
WASA	Water Supply and Sewerage Authority

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The Government of the People's Republic of Bangladesh has showed its enthusiasm and commitment to the Multilateral Environmental Agreement (MEAs). It has signed and ratified most of the Multilateral Environmental Agreements and several strategies and action plans have been formulated to fulfill its international commitments and support national development. It has also formulated several strategies and action plans to support several national and sectoral policies.

The noteworthy strategies and action plans prepared under the auspices of the Ministry of Environment and Forests to address environment and climate change are a) National Conservation Strategy (NCS); b) National Environmental Management Action Plan (NEMAP); c) National Bio-diversity Strategy and Action Plan (NBSAP); d) National Action Programme (NAP) for Combating Desertification in Bangladesh; e) Bio-safely Guideline for Bangladesh; f) National Adaptation Programme of Action (NAPA) to address climate change; g) National Capacity Self Assessment (NCSA); h) Bangladesh Climate Change Strategy and Action Plan.

Addressing poverty is one the key priority areas of the Government of Bangladesh. In order to address poverty and Millennium Development Goals (MDGs), Ministry of Planning has prepared a strategy document "Unlocking the Potential: National Strategy for Accelerated Poverty Reduction" in 2005 which is widely known as Poverty Reduction Strategy Paper (PRSP). Economic growth and macro economic stability, agriculture and rural development, critical natural resource management, social safety net, human development and good governance along with others areas have been identified as means of poverty reduction. The Planning Commission has recently prepared "the National Strategy for Accelerated Poverty Reduction (2009-2011)" and has recognized climate change as one of the emerging issues.

In the 1992, at the United Nations Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, governments made a commitment to develop and pursue the National Sustainable Development Strategy (NSDS) (Chapter 8 of Agenda 21). At the Rio+5 Summit in 1997, government reaffirmed that the NSDS was an important mechanism for achieving sustainable development. It was also agreed that a National Coordinating Body (NCB) could be the useful multi-stakeholder's assembly or body to bring all the relevant stakeholders, such as government, business and civil society to a common platform and, that to address issues pertaining to sustainable development. At the World Summit on Sustainable Development (WSSD) held in 2000, heads of states and governments reaffirmed their commitments to the principles of sustainable development and other provisions of Agenda 21.

A major achievement of UNCED was Agenda 21, a thorough and broad-ranging programme of actions demanding new ways of investing in our future to reach global sustainable development in the 21st century. Its recommendations ranged from new ways to educate, to new ways to care for natural resources, and new ways to participate in designing a sustainable economy. The overall ambition of Agenda 21 was breathtaking, for its goal was nothing less than to make a safe and just world in which all life has dignity and is celebrated.

Different environment and development strategies and plans have identified "lack of coordinated mechanism" as one of the key barriers towards implementation of sustainable development. There is a need to formulate more holistic NSDS that can be built on existing strategies or plans by integrating economic, social and environmental objectives in accordance with the Johannesburg Plan of Implementation (JPOI).

Considering the above, the Norwegian Agency for Development Cooperation (NORAD) and UNEP Regional Resource Centre for Asia and Pacific (UNEP RRC.AP) has undertaken this project to strengthen the capacity of and assist national governments in formulating National Sustainable Development Strategy and Action Plans (NSDS&AP) towards mainstreaming sustainable development in the decision making process.

The United Nations Environment Programme (UNEP) initiated a discussion with the Ministry of Environment and Forests, Government of the Peoples Republic of Bangladesh to facilitate its commitment under UNCED and WSSD. The UNEP and the Government of Bangladesh came to an agreement in middle of 2007 to prepare the National Sustainable Development Strategy (NSDS) for Bangladesh and to establish an institutional structure in the form of National Commission on Sustainable Development (NCSD) or any other appropriate body. The government of Bangladesh has designated the Ministry of Environment and Forests (MoEF), Government of the People's Republic of Bangladesh as the National Focal Point (NFP) to coordinate the formulation of the NSDS, in close coordination with UNEP. The Ministry of Environment and Forests (MoEF) has designated the Department of Environment as executing agency and appointed Bangladesh Centre for Advanced Studies (BCAS) as a Collaborating Centre for formulation of the National Sustainable Development Strategy and to suggest nationally appropriate body to implement NSDS.

The guideline for preparation of the NSDS for Bangladesh was prepared based on the guideline prepared by the United Nations Environment Programme (UNEP). This guideline defined the Principles, Functions, Role and Elements of NSDS and Process in managing the sustainable development polices and actions in Bangladesh. Considering country circumstances, approaches and principles to be followed for formulation of NSDS for Bangladesh were given below.

Principles of Formulating NSDS

- **People Centered:** The formulation process has followed People Centered approach in preparing NSDS for Bangladesh so as to ensure long-term beneficial impacts on disadvantaged and marginalized groups. Engagement of stakeholders at different stage of formulation, addressing poverty and access to services for the people are key elements of people centered approaches;

- **Develop Long-term Vision:** A long-term vision for Bangladesh has developed in consultation with all relevant stakeholders. The long term vision has also identified short-term and medium term strategies and activities to help in achieving long-term vision;

- **Comprehensive and Integrated:** Formulation of NSDS has made efforts in integrating economic, social and environmental objectives. Under each Strategic Priority Area several sub-strategies under three key elements of sustainable development have been identified;

- **Comprehensive and Reliable Analysis:** An attempt made to identify priorities on the basis of a comprehensive analysis of the present situation and of forecasted trends and risks, examining the links between local, national and global challenges;

- **High–level Government Commitments and Lead Institutions:** The Ministry of Environment and Forests has set up a Steering Committee to guide the entire process of preparation which help in ensuring high-level involvement and commitments. Attempts also made for ensuring such commitment involving national and local governments on a long term basis;

- **Link National and Local Level:** During formulation of NSDS, the Project Management Office organized regional and national level consultation for active engagement both in preparation and implementation of National Sustainable Development Strategy by national and local government and general mass in implementing NSDS.

- **Building on Existing Mechanisms and Strategies:** The National Sustainable Development Strategy has been built on existing policies, strategies and implementation mechanisms to ensure complementarities and coherence;

- **Develop and Build on Existing Capacities:** Existing political, institutional, human, scientific and financial capacity of Bangladesh have been assessed at the outset of the NSDS. Emphasis given for building requisite capacities on continuous basis for

successful preparation and implementation of NSDS.

- **Incorporating Monitoring, Learning and Improvement:** The NSDS has suggested appropriate indicators wherever possible to monitor and evaluation the processes, track progress, capture lessons, and signaling for deviation if any.

Defining vision and strategic priority areas along with goals of the National Sustainable Development of Bangladesh have been prepared through consultation processes at national and regional levels. The suggested objectives, targets and strategies suggested in the National Sustainable Development Strategy (NSDS) are primarily based on the outputs and findings of the inception cum training workshop, regional workshops and national consultation workshop organized by the Department of Environment (DoE), Ministry of Environment and Forests.

Vision of the NSDS of Bangladesh is to ensure sustained economic growth, environmental protection and social justice that implies improvement of livelihood options of the people, reduction of poverty, ensuring wise use of natural resources, good governance and people's participation.

3.1 Strategic Priority Areas for Achieving SD

The National Sustainable Development Strategy (NSDS) of Bangladesh has identified Four Strategic Priority Areas and achievement of these will put the country in a development path that will deliver services for present generation as well future generation. It will also facilitate in addressing long-term sustainability issue of critical areas and its achievement. Key objective of the identified Strategic Priority Areas and sustainability of the critical areas those will be facilitated through the National Sustainable Development Strategy (NSDS) are given below.

- **Sustained Economic Growth:** It is expected that implementation of different strategies under sustained economic growth will ensure and sustained accelerated growth, as identified in the several national policies and strategies, without compromising environment sustainability and enhancing social equity. It will also facilitate poverty reduction through employment generation, bring effective utilization of energy and mineral resource, greening manufacturing industries, promotion of trade including export, and enhance remittance through creating job at international market.

- **Agriculture and Rural Development:** It attempts to provide a direction to search for possible ways and means in the agricultural sector including fisheries and livestock as they will remain the engine for overall economic growth and support rural development. Key objective of this Strategic Priority Area is to exploit agricultural for ensuring economic emancipation with special focus on rural development and food security for the growing populace without disturbing and degrading environmental and ecological sustainability.

- **Social Security and Protection:** It suggested different strategies to ensure the rights of the citizens, quality health and sanitation services, minimum shelters for all including access to services and utilities, quality education, creating social safety net, gender equity and empowerment of women, child rights and special services for children, aged and people needs special assistance. These are critical indicators for demonstrating growth of social development.

- **Environment and Natural Resource Management:** Primary objective of this strategic priority area is to ensure environmental protection for humans, ecosystems and resources which implies to promote the conservation, augmentation and efficient utilization of the natural resources. It covers land, forest, water, bio-diversity, and pollution control as well as climate change as one of the most important issue. It appears that without addressing climate change overall sustainable development can not be achieved.

- The National Sustainable Development Strategy (NSDS) has also identified three important cross cutting areas those are important for all four strategic priority areas. These cross-cutting areas are;

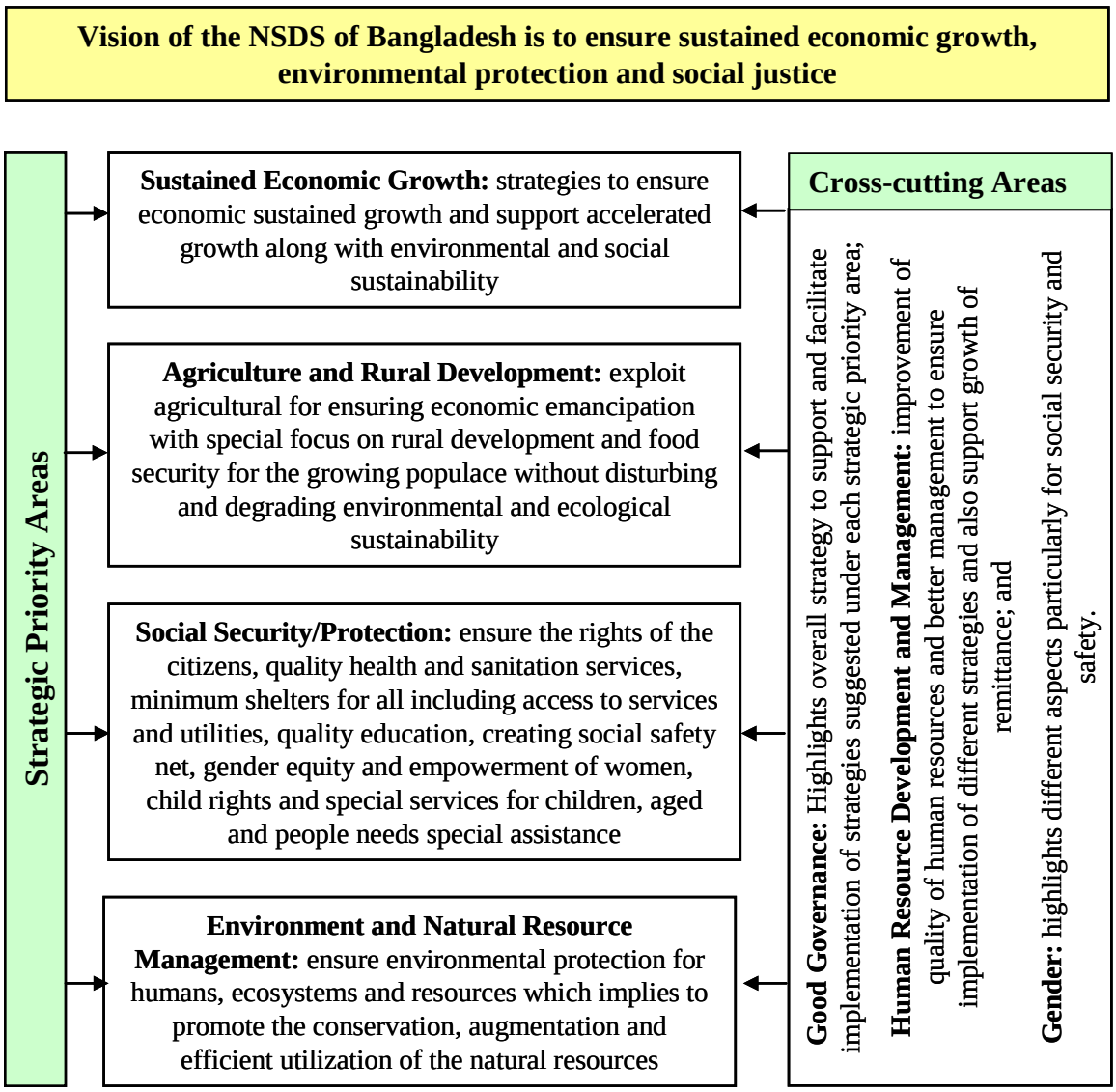
- **Good Governance:** Objective of this cross-cutting area is to highlights and suggested need for good governance which is necessary to support and facilitate overall implementation of strategies suggested under each strategic priority area.;

- **Human Resource Development and Management:** Key issues here is improvement of quality of human resources and better management to ensure implementation of different strategies and also support growth of remittance.; and

- **Gender:** Different aspects gender particularly for social security and safety has been primarily incorporated in the social security and protection section of the report.

A schematic representation of the vision, strategic priority areas and cross-cutting areas are given below.

Figure 3.1 schematic representation of the vision, strategic priority areas and cross-cutting areas



4.1 Country Profile

Bangladesh is one of the largest deltas in the world, second to the Amazon, formed mainly by the Ganges-Brahmaputra-Meghna (GBM) river system, except for the hilly regions in the northeast and southeast and terrace land in northwest and central zones. The country is located between 20°34' to 26°38' north latitude and 88°01' to 92°42' east longitude. The total land area is 147,570 sq. km. and consists of low and flat land. A network of 230 rivers with their tributaries and distributaries crisscross the country and, therefore, the country is virtually a conglomerate of islands.

It had a population of about 124.35 million in 2001 which increased to 143.91 million in 2007 (BBS, 2008) with a per capita Gross Domestic Product (GDP) of US$ 554 per annum (Planning Commission, 2008). The population of the country is increasing over the years with significant variation in urban and rural population growth. In the last decade (1991-2001), the overall increase was about 16 percent while urban and rural growth was about 37 percent and 11 percent respectively (BBS, 2003). It is estimated that the population of the country will be 170 million by the year 2020 (WB and BCAS, 2000) and will be about 218.25 million by 2030 (BBS, 2008).

According to the Human Development Report 2007, Bangladesh ranks at 140 in the Human Development Index (HDI). The life expectancy at birth is 63.1 years and adult literacy rate was 47.5% in 2005 (UNDP 2007). However, Bangladesh has made significant progress in addressing the Millennium Development Goals (MDG) with regard to sanitation, water supply and nourishment. For instance improved sanitation coverage has increased from 20% in 1990 to 39% in 2004 while 74% of the population was using improved water source in 2004 (UNDP 2007). Percentage of the GDP that is spent on health and education is 0.9 and 2.5 respectively. In terms of energy consumption and electricity supply, Bangladesh is still lagging behind. According to the Human Development Report 2007, the population of Bangladesh still without electricity in 2005 was 96.2 million.

In the context of Multilateral Environmental Agreement and Treaties, Bangladesh is signatory of most of the MEAs and of the key agreement and treaties are:

- United Nations Framework Convention on Climate Change (UNFCCC): 1994
- Kyoto Protocol to the UNFCCC: 2001
- Cartagena Protocol on Bio-safety: 2004
- Convention on Biological Diversity (CBD): 1992
- Vienna Convention for the Protection of the Ozone Layer: 1990
- Montreal Protocol on Substances the deplete the Ozone Layer: 1990
- Stockholm Convention on Persistent Organic Pollutants: 2007
- United Nations Convention on the Law of the Sea (UNCLOS): 2001
- Convention to Combat Desertification: 1996

4.2. Challenges of Sustainable Development for Bangladesh

The challenges that Bangladesh faced on the path to Sustainable Development are numerous. It includes the goals stated in the MDGs. For the purpose of the National Sustainable Development Strategy, the challenges to sustainable development were studied keeping in mind the Vision. The major challenges to sustainable development for Bangladesh can be described as:

4.2.1 Poverty and Economic Growth

The Poverty Reduction Strategy Paper (PRSP) has suggested that a) building of a road map for accelerated poverty reduction should be built on past achievements while preventing slippages, b) address the multi-dimensionality of poverty through a strategic choice of priorities and, c) unlock the agency potentials of the nation through an optimal mix of public action, private initiatives and community mobilization.

To better understand the challenges of sustainable economic growth this section has look at the present state of employment and poverty linkages, energy and urbanization.

Employment and Poverty

Employment generation is one of the means of addressing poverty in Bangladesh which

has been suggested in the Poverty Reduction Strategy Paper.

An employment strategy to accelerate poverty reduction must first and foremost aim to empower the poor. Table 4.1 shows that in every decade about 10 million labour force will be added due to increase in population and they need employment. The way agriculture is supporting large labour force at present will not able to accommodate the extra labour force by this sector. This is due to continuous degradation of cultivable land. It is estimated that about half of labour force project in the agriculture, forestry and livestock sector will be unemployed or under employed in 2030.

The growth story of the 1990s in many ways signals a coming-of-age of this meso-economy: formal and informal activities in service, trade, construction and small industries proliferating in the rural market centres serving a demand boost coming from agriculture and remittance income among others. Much of this meso-economy dynamics has been bereft of policy attention partly because policy-making has tended to follow traditional sectoral approaches which fail to focus on their inter-linkages such as that between agricultural diversification, small and medium entrepreneurs (SMEs), vocational education or decentralization.

Adopting a meso-economic perspective will be crucial to devising a more effective employment strategy through which the poor are given a firm stake in the growth process. Three core constituencies have to be targeted: rural poor, women and educated youth. A missing focus has been the issue of productivity, particularly as it pertains to the needs of the poor. Policy discourses on technology and skill-formation have suffered from too strong a middle-class orientation in their goal-setting: nowhere is this more evident than in the area of information technology which puts a skill such as software development on a high pedestal while leaving lower-end skills such as hardware troubleshooting largely out of focus. Yet it is the latter which carry greater promise for the bulk entry of the educated poor into these new sectors.

An active search for skill and technology opportunities which relate to the circumstances of the poor and carry greater potential to integrate the informal enterprises of the meso-economy to growth sectors will

Table 4.1 Labour Force in Different Sector

Sector	**Labour force (million)**			
	2000	**2010**	**2020**	**2030**
Agriculture, Forestry and Fisheries	19.8	31.11	40.66	48.25
Mining and Quarrying	0.2	0.31	0.41	0.48
Manufacturing	3.7	5.82	7.60	9.02
Electricity, Gas and Water	0.1	0.16	0.21	0.25
Construction	1.1	1.73	2.26	2.68
Trade, Hotel and Restaurant	6.1	9.58	12.52	14.86
Transport, Storage & communication	2.5	3.93	5.18	6.09
Finance & Business Services and Real Estate	0.4	0.63	0.82	0.98
Health, Education, Public Administration & Defence	-	-	-	-
Community and Personal Services	5.1	8.02	10.47	12.43
Total	39.0	61.28	80.08	95.04

Source: BBS

be critical to energizing an employment-oriented scaled-up attack on poverty. A cautionary point to bear in mind here is that traditional vocational education initiatives have suffered from a tendency to create white collar aspirations rather than servicing market needs. Success in a new skill strategy will hinge on institutional strategies which are able to read market needs better and devise effective skill education to service such needs.

The expansion of the economy through growth has created employment opportunities resulting in an increase in the number of employed population from 34.8 million in 1995-96 to 39.0 million in 1999-00 and further to 44.3 million in 2001-02. However, dynamic changes in the labour market especially the increase in the labour force participation rate as well as slow growth of employment have resulted in unchanged unemployment rate at 4.3 percent between 1999-00 and 2001-02 and a jump in the underemployment rate. Bangladesh thus has been less successful in reaping the full benefit of the virtuous circle of economic growth leading to poverty reduction via growth of employment with higher productivity. The policy challenge for Bangladesh is to accelerate the rate of growth and make it more employment friendly. The future growth process must generate employment opportunities for the poorer sections of the population and the returns from employment, both self and wage/salary employment, must generate adequate earnings for them so that they can break out of poverty. In addition to this overall outcome, the growth process must also address some specific features of the labour market. These include low growth in formal employment opportunities, with 80 percent of workers being employed in the informal sector, high rates of unemployment amongst the youth, increase in unemployment and poverty among certain groups who were earlier employed but were laid off or retrenched due to the privatisation and closing down of mills and factories, persistent gender inequalities with respect to employment and wages in spite of the increase in women's share of wage employment in manufacturing, inadequate coverage of existing social protection schemes, child labour, and trade union rights and representation in general in a liberalized and globalized economy.

With the increasing role of the private sector in the economy, the future prospect of employment generation depends mostly upon employment-friendly growth of the private sector. The Government will also directly create some employment through public sector employment and generation of employment consequent on public expenditure. However, the basic focus will be to influence the demand for supply of labour and market outcome through labour market and other complementary policies:

- Strengthening role of public investment in employment creation through its direct and catalytic support to economic, physical and social infrastructure building, and fostering growth of private investment and labour market regulation. The labour laws should make the labour market more flexible and at the same time protect the rights of workers.

- Formulating or implementing active labour market policies. Active labour market policies support employment generation in two ways –

  - directly, by public works and enterprise development, also contributing to poverty alleviation by providing work and income; and

  - indirectly, by enhancing worker's skills and capacities by training and retraining.

- Inducing faster growth in labour-using, employment-intensive sectors, e.g., agriculture, small and cottage manufacturing industries, and community, social and personal services.

Facilitating sustained labour demand through sustained growth of both established and newly emerging sectors like RMG, frozen food, leather and leather goods, tourism, agro-based industries, and pharmaceuticals.

In developing countries like Bangladesh SMEs provide employment for 3/4th of the industrial workforce. Since it is labour intensive and needs low capital to establish, it is perfect for developing economies that are characterized by cheap labour and high unemployment rates. SMEs are essential in

ensuring growth of employment, which is vital for poverty reduction. The major constraints faced by the SMEs are:

1. Policy-induced: the industrial policy practically ignores the SMEs and the policies themselves are not conducive towards SME development.

2. Structural constraints are the bottlenecks experienced due to lack of access to information, finance, skills etc.

3. The above two constraints together result in poor governance and weak public sector delivery that makes thing even more difficult for the SMEs.

SMEs are the major employment sector of the country and have succeeded in providing employments that the government has failed to employ. SMEs needs more facilities for development and needs to be looked into in more detail. Just policy changes are not enough.

Energy

Energy is one of the primary drivers of economic growth and development. Coverage and quality of energy supply is one of the key barriers both for industry an agriculture sector. In order the meet the present and future challenges, power and gas facilities should be expanded and alternative sources of power for remote areas should be developed. Accountability, transparency and modernization in the management of the power and gas sector need to be ensured. Illegal electricity connections have to be severed and system loss has to be minimized.

Furthermore the PRSP has identified 'infrastructure development' as playing a critical role in higher economic growth, poverty reduction and social development. Facilities in infrastructure development are beneficial for the growth-poverty nexus through the channels of:

1. Physical infrastructure: effects socio-economic conditions;

2. Infrastructure service: poor can benefit from the economic opportunities of growth; and

3. It identifies that infrastructure helps in the realization of the benefits of policy reforms through providing socio-economic and spatial integration of the economy.

The other sectors of infrastructure development include renewable energy and transport and both are very important in terms of economic development and poverty reduction. Infrastructure development is a mean for generation of employment through various activities. Infrastructure development just for the sake of development will push the goals of poverty reduction back instead of eradication.

Urbanization as Growth Driver

Bangladesh is a rapidly urbanizing country with the proportion of urban population expected to rise to one-third of total population by 2010. Though urbanization has so far been a factor contributing to poverty reduction, growing disparities in living standards within the major cities and the problem of urban poverty in general in both major cities and secondary towns is emerging as an important policy concern. Unplanned city growth, illegal encroachments on public land, poor urban governance and lack of attention to the needs of the informal sector are some of the key factors exacerbating the problem of urban poverty. A tendency, however, to equate the problem of urban poverty with that of big city slum life only and the absence of relevant and up to-date information have militated against adopting a holistic perspective on the issue. While slums represent the most visible face of urban poverty, they are not an undifferentiated category. In particular, the distinction between transient settlements and poor and working class neighbourhoods with relatively stable ownership and land tenure is worth highlighting. The category of new arrivals too requires some attention particularly in terms of information support.

An effective strategy to address urban poverty is closely linked to an effective urbanization strategy. The critical policy entry points to address urban poverty pertain to public health including sanitation, health-care and prevention of communicable diseases, access to basic services particularly water, power and transport for poor women, slum-dwellers and poor neighbourhoods, minimum housing stock affordable by various categories of urban poor, and, strong and effective policy support to informal

sector economic activities. Discouraging land-grabbing and better utilization of urban *khas* land for community objectives is also a priority.

4.2.2 Environment and Natural Resource Management

Human lives and livelihood in Bangladesh are intricately intertwined with nature. Consequently, no process of development and eradication of poverty can be conceived of without putting caring for environment and sustainable development at the centre-stage. On the other hand, as the poor depend heavily on nature for their livelihood, without the whole-hearted involvement of the poor, caring for environment becomes an extremely difficult task. Bangladesh is a signatory of the Multilateral Environmental Agreement by which government is committed to undertake certain environmental management actions which will be largely beneficial to the poor.

Operationally, poverty-environment linkages are evident at two levels - one is conservation of nature and natural resources for sustainable livelihood while the other is controlling/combating pollution for maintenance of biodiversity and protection of human health. The Government policies in the areas of macroeconomics and various sectors must keep in focus the impacts they might have on the environment. On the one hand there is "Green Vs. Brown" arguments that the country's effort to grow fast, ignoring environmental concerns, may cause long-term damage to the environment and also dampen growth and development. At the same time it is also imperative for Bangladesh to grow faster in the short-run in order to reduce poverty. Therefore a careful balancing act must be orchestrated where economic growth is maximised without compromising environmental protection and safety. Policies and actions of the Government must not cause marginalization of the poor and force them to intensify over utilization of the open access natural resource base, or make them more vulnerable to pollution hazards.

On the other hand there is counter argument that growth will create fiscal space and resource that can be used to enhance the quality of growth and promote sustainable resource management. In terms of environmental issues it is important to keep in mind that in a country where the majority of the poor are highly dependent on natural resources, the improved management of natural resources is a prerequisite for poverty reduction.

Poverty-pollution linkages are the direct and indirect consequences of pollution, particularly of air and water, generated by public/private industries. These kinds of pollution have a strong human health impact, a major cause of erosion of human productivity and of death in many instances, particularly among the poor and marginalised communities. The combined pressure from the shrinking resource base and worsening living conditions weaken the productive capacity of the poor, make them more marginalised over time, and eventually trap them in what is often referred to as the "vicious circle of poverty."

Urbanization as Environmental Issues

Urban areas particularly the big cities including Dhaka have serious pollution problems with respect to solid waste management, growth of slum areas without supply of clean water, and sanitation facilities, with congested living conditions, inadequate drainage system, and untreated industrial waste disposal. Most of these factors affect the urban poor in terms of general hardship, ill-health and even death. As usual it is the women and the children who are the worst victims. Such appalling conditions also adversely affect labour productivity due to disease and morbidity and thus increases vulnerability of the poor. Reduction of environmental problems related to urbanization must address improvement in the existing solid waste disposal system in all towns and cities, living conditions of the slums, and drainage congestions. The regulatory framework must be strengthened and implemented strictly with provisions for proper and adequate incentives to entrepreneurs to ensure that all industrial wastes are properly treated before disposal. With respect to waste disposal public/private collaboration is essential, system must be efficient and the Government needs to introduce sanitary landfill for all solid waste disposals and/or arrange for using the waste to produce energy. The disposal of hazardous and medical wastes in urban areas is a major cause of concern for urban life including that

of the poor who are engaged in scavenging activities.

Another serious problem in the urban areas is improperly planned land development, whereby low lying lands, canals, and ponds are filled up for constructing residential and commercial buildings. This is causing reduction in the floodwater retention areas, water logging and drainage problems. Construction of roads without appropriate environmental mitigation measures is also adding to these problems. Flood protection activities around urban areas without appropriate environmental mitigation measures are also responsible for water logging.

Even though a water resource is an integral part of economic and social development for Bangladesh, it is very poorly managed. PRSP has identified the major areas of concern in water resource management as floods, drainage congestion, droughts, cross-boundary flows, river erosion and accretion, cyclones, water quality and rights, surface salinity, groundwater quality, climate change and environmental management.

According to the PRSP the emerging issues of importance in water resources development and management are:

1. Sharing of waters of common rivers to maintain environmental flow requirement and support development;
2. Proposed river-link project by India need to be discussed bilaterally between India and Bangladesh to prevent desertification downstream; and
3. Building water reservoir up in the Himalayas for storage of water in order to augment supply during lean season and for generation of hydro-electricity.

4.2.3 Natural Disaster

Natural disaster is a regular phenomenon in Bangladesh. Key natural disasters are riverine and flash flood, tropical cyclones, tornados, and droughts due to its unique geographical location (Himalaya to the north and Bay of Bengal to the south). It is reported that between 1991 and 2000, 93 major disasters occurred in Bangladesh, resulting in nearly 200,000 deaths and causing US $ 5.9 billion in damages with high losses in agriculture and infrastructure (CCC, 2007). Since then, the country is experiencing extreme climatic events frequently. It is revealed from the records of last three decades that frequency of natural disasters increased over time. The following table shows that frequency of flood and tornado has increased in last two decades.

Changes in Flood Frequency

Flood is a regular natural disaster occurring in Bangladesh and thus entailing huge damage to the economy. Four main types of natural floods occur in Bangladesh are given in table 4.2. From historical point of view, it has been observed that the frequency, intensity and magnitude of flood have increased as well. Since 1954, 48 small, medium and big floods have struck Bangladesh. Among those, 7 events were severe where more than 30% of land area was inundated.

In the context of return period of different scale of flood, it is also found that a flood event which inundates 37% of land usually occurs once in every 10 years. But found that flood with land inundated 37% occurred 5 times in last 30 years and 3 times in last 10 years. Similarly, flood which inundates 60% area suppose to occur once in every 50 years but in last 30 years such flood has occurred twice and in last 10 years has occurred once. So, it is quite evident that frequency and intensity of flood has increased significantly

Table 4.2: Frequency Table of Hazards

Decades	No. of events			
	Flood	Cyclone	Tornado	Drought
80s	1	7	2	3
90s	3	4	1	3
00s	9	7	6	1
01s	6	1	5	0
Total	19	19	14	7

Source: BWDB (2007), CEGIS & SMRC

Table 4.3: Different types of flood occurring in Bangladesh

Type of Flood	Causes of occurrence	Time/duration	Tentative affected area
Flash Flood	Run-off during exceptionally heavy rainfall occurring in neighboring upland areas	Pre monsoon months of April and May	The foot of the Northern and eastern hills of Bangladesh
Rainwater flood/ Monsoon Flood	Heavy rainfall occurring over flood plane and terrace areas within Bangladesh.	April-May June-August	In the south-western part of the country
River Flood	Snow melt in high Himalayans, Heavy monsoon rainfalls over the Himalayans, the Asam Hills, the Tripura Hills and the Uppar Brahmaputra and Ganges flood plains.	April-May and June-September	Catchment areas of three major rivers.
Coastal Flood	In case of important cyclones the entire coastal belt is flooded. Coastal areas are also subjected to *tidal flooding*	Tidal flood occurs from June to September	South western coastal areas.

Source: Ahmed, 2006

in last 30 years.

Changes in Cyclone and Storm Surges

The Bay of Bengal is a known breeding ground of tropical cyclone and hit the coastal area of Bangladesh during pre-monsoon (April and May) and post-monsoon (October and November). One of the reasons why it hits Bangladesh coast often is the conical shape of the Bay of Bengal. Over the last 50 years, 15 severe cyclones with wind speed ranging from 140 to 225 km/hr have hit in the coastal area of Bangladesh of which 7 hit in pre-monsoon and rest in the post-monsoon season.

Tropical cyclones are the most talked climatic events in the subcontinent especially in Bangladesh and India. The coastal area of Bangladesh is more vulnerable to cyclones in the Bay of Bengal Regions. Historical record of Cyclone formed in Bay of Bengal revealed that 15 most damaging cyclones have struck Bangladesh vary badly. Among those 4 were catastrophic and killer cyclones which struck in 1919, 1970, 1991 and 2007. The damaging cyclonic events have been identified depending on wind speed and surge height. The cyclones which have wind speed of 120 kph and surge height of 4.5 m have taken into account.

Changes in Drought

Bangladesh experiences major droughts once in 5 years. Droughts at local scale are much more frequent and affect part of the crop life cycle. The western part of the country is vulnerable to drought during pre-monsoon period. Severe drought occurred in the country

During the last 50 years, Bangladesh suffered about 20 drought conditions (Table 4.3). The drought condition in north-western Bangladesh in recent decades had led to a shortfall of rice production of 3.5 million tons in the 1990s. If other losses, such as, to other crops (all rabi crops, sugarcane, tobacco, wheat, etc) as well as to perennial agricultural resources, such as, bamboo, betel nut, fruits like litchi, mango, jackfruit, banana etc. are considered, the loss will be substantially much higher.

Current Severe drought can affect yield in 30% of the country, reducing national production by 10%. 2030 Temperature increase of 0.5°C and annual rainfall reduction of 5% could reduce runoff into the Ganges, Brahmaputra and Meghna Rivers by 14%, 11% and 8%, respectively. With 12% reduction in runoff, the population living in severe drought-prone areas increases from 4% to 9% under moderate climate change.

4.2.4 Climate Change: Future Challenge

The climate of Bangladesh is influenced by monsoon climate and characterized by high temperature, heavy rainfall, often-excessive humidity and marked seasonal variations.

Table 4.4: Chronology of droughts of historical significance

1791	Drought affected Jessore district. Prices had risen to twice and three times of their usual levels.
1865	Drought proceeding famine occurred in Dhaka.
1866	Severe drought in Bogra. The rice production of the district was hit hard and the price went up three times its normal level.
1872	Drought in Sundarbans. The rainfall was deficient and in several lots the crops suffered to a great extent.
1874	Bogra was affected and the crop failure was much greater. The rainfall was extremely low.
1951	Severe drought in northwest Bangladesh and substantially reduced rice production.
1973	One of the severest in the present century and was responsible for the 1974 famine in northern Bangladesh.
1975	This drought affected 47% of the entire country and caused sufferings to about 53% of the total population.
1978-79	Severe drought causing widespread damage to crops. Reduced rice production by about 2 million tons and directly affected about 42% of the cultivated land and 44% of the population. It was one of the severest in recent times.
1981	Severe drought adversely affected crop production.
1982	Caused a total loss of rice production amounting to about 53,000 tons. In the same year flood damaged about 36,000 tons of rice.
1989	Most of the rivers in NW Bangladesh dried up and several districts, such as Naogaon, Nawabganj, Nilpahamari and Thakurgaon; dust syndrome occurred for a prolonged period due to drying up the topsoil.
1994-95	This drought was followed by that of 1995-96, caused immense damage to crops, especially in the case of rice and jute the main crops of NW Bangladesh. These are followed by bamboo-clumps, a major cash earning crop of many farmers in the region. In the recent times, this was most persistent drought in Bangladesh.

Although more than half the area is north of the Tropics, the effect of the Himalayan mountain chain is such as to make the climate more or less tropical throughout the year. The climate is controlled primarily by summer and winter winds, and partly by pre-monsoon (March to May) and post-monsoon (late October to November) circulation. The Southwest Monsoon originates over the Indian Ocean, and carries warm, moist and unstable air. The easterly Trade Winds are also warm, but relatively drier. The Northeast Monsoon comes from the Siberian Desert, retaining most of its pristine cold, and blows over the country, usually in gusts, during dry winter months.

Bangladesh is already vulnerable to many gradual change phenomenons of climate change as well as climate change related extreme events. It is expected that climate change will bring changes in characteristics of gradual change phenomenon and natural hazards which will result changes in physical, social and production system. Studies and assessments on impacts, vulnerabilities and adaptation to climate change and sea level rise for Bangladesh clearly demonstrate that Bangladesh is one of the most climate vulnerable countries in the world. Rainfall is predicted to become higher and more erratic. Frequency and intensity of natural disasters are likely to increase especially in the northern and western part of the country. Several early evidences of the above phenomenon and its associated impacts in the agriculture, health, water and sanitation, biodiversity are already visible in Bangladesh.

Overall impacts of climate change on Bangladesh would be significant. It is estimated that climate change could affect more than 70 million people of Bangladesh due to its geographic location, low elevation, high population density, poor infrastructure,

high levels of poverty and high dependency on natural resources. It was found that the population living in the coastal area is more vulnerable than the population in other areas (Alam and Laurel, 2005). Coastal resources upon which the most people depend are likely to be affected severally due to climate variability and change. It is predicted that for 45 cm rise of sea level may inundate 10-15% of the land by the year 2050 resulting over 35 million climate refuges from the coastal districts. Ultimately adverse impacts have the potential to undermine poverty reduction efforts and could compromise the Millennium Development goals (MDGs), such as the eradication of poverty and hunger by 2015. The OECD and World Bank also estimated that 40% of the Overseas Development Assistance (ODA) to Bangladesh may be climate sensitive or at risk.

It is also revealed from the studies and assessments that the context of vulnerabilities and associated impacts vary by spatial, temporal scale and socio-economic condition of communities, resulting need for different adaptation measures and actions. Coastal area of the country is prone to salinity intrusion and tropical cyclone; floodplains in the central areas are prone to flood; north western regional of the country is prone to drought; north eastern part of the country is prone to flash flood; and hilly region of the country is prone to erosion and landslide. Water resources and agriculture reported to be most impacted sectors due to climate change.

Recognition of adverse impacts of climate change on economic development, life and livelihoods of the poor and ultimately impeding millennium development goals has pushed urgent need for adaptation to deal with unavoidable impacts of climate stimuli including variability and extreme events in Bangladesh. The Ministry of Environment and Forest, Government of Bangladesh has prepared Bangladesh Climate Change Strategy and Action Plan 2008 as a living document and has allocated about US$ 43 million. The development partners in Bangladesh and the Government of Bangladesh has also agreed to setup a Multi-donors Trust Fund to deal with Climate Change adaptation and mitigation.

4.3 General Strategies in the Path to Sustainable Development

In order to bring about sustainable development the general strategies set out are:

- Creating an economy that will have continued growth and benefit will penetrate at all level to ensure sustainable development;
- Enhance institutional capacity and bring necessary changes at institutional at institutional level as appropriate for sustainable development;
- Creating a policy and regulatory framework to create an enabling condition and support sustainable development; and
- Creating a knowledge base for sustainable development.
- Initiate cooperative farming, commercial fishing, horticulture etc farm with participation of poor and landless people in the disaster prone area.
- Introduce direct marketing of agro-based products and cash crops and eliminate middle men
- Partnership between public and private organization for joint efforts in environment

5.1 Introduction

Bangladesh, since its independence in 1971, has been fighting against poverty. Over the last more than 35 years, the economy of the country has achieved significant progress in terms of several social indicators like access to safe drinking water, literacy rate, net enrolment ratio for both boys and girls, as well as in income and employment but poverty is still endemic in this economy. The political priorities of Bangladesh lie in terms of reducing poverty through increasing employment. Pro-poor economic growth has been identified as one of the strategic building blocks for poverty reduction. It is to be noted hat identification of strategies for poverty reduction is a challenging task but more challenging task is to translate the strategy into actions and implementation of these actions.

In the last five years, rate of growth of both aggregated and per capita income has shown some acceleration. The growth rate of Gross Domestic Product was around 5.5 percent during 1998 to 2003 which has increased to around 6 percent during 2004 to 2007. However, it is important to note that benefit of the growth for poverty reduction depends on sources and nature of growth. The key sectors those contributed to GDP and supporting large labour force of the country are a) agriculture including fisheries, b) manufacturing, c) wholesale and retail trade, d) transport, storage & communication. The agriculture sector, which employs nearly 56% of its labour force, has been declining in terms of its contribution to GDP which now stands are only 19%. Remittance is an important source of national income and also providing employment outside the country.

The economic growth of the country is driven by the different sectoral policies supported by enabling environment for private sectors for their investment and employment generation by the government. The Poverty Reduction Strategy for Bangladesh is the first strategy document suggested a number of strategies economic growth for poverty reduction. The strategy includes acceleration of economic growth, job creation and employment opportunities, projection of sectors from natural disasters etc.

It is well recognized that economic growth relates with four types of capital i.e. a) natural capital, b) physical capital, c) human capital and d) social capital. Natural capitals are defined as the existing stock of land, forests, fisheries, water, mineral/gaseous resources, and the quality of these resources. Physical capitals are defined as the stock of infrastructure and capital, human capitals are the stock of human resources including its quality, and social capital is the network of individuals and social norms which are important ingredients for continuation of delivery of services and output in the country.

The challenge of sustained economic growth of Bangladesh is to ensure that the accelerated growth targeting under several strategy of the Government of Bangladesh will continue over long-term against depletion of natural resource base both in quantity and quality, continued investment for physical capital for meeting the growing demand of population, and enhance human and social capital to meet quality of requirement by different sectors. It is also important to note that rate of sectoral growth does not happen in isolation and therefore keeping harmony among the four capital is utmost important.

5.2 Objective

Considering the above, the objective of the sustained economic growth under the National Sustainable Development Strategy is to ensure and sustained accelerated growth without compromising environment sustainability and facilitate poverty reduction through enhancing social equity. It also implies nurturing all the four types of capital in an economy so that the capacity to produce in the future is not diminished.

5.3 Present Economic Growth Scenario

Bangladesh's economy is presently characterized by increasing growth rate with inter annual fluctuation, increasing inflation, external sector balance and low employment rate. Bangladesh is primarily an agriculture based society. Even thought agriculture's share in the GDP is decreasing, with 19.61% (FY 2005-06) agriculture still has the largest share of the Bangladesh's GDP (BBS, 2007). But most importantly it engages and supports a larger share of labour force.

Economic growth is 'an increase in the total output of a nation over time'. Economic growth is usually measured as the annual rate of increase in the nation's real GDP (excluding inflation). The current per capita Gross Domestic Product (GDP) of Bangladesh is US$ 487 per annum (BBS, 2006-07). According to the Bangladesh Bureau of Statistics the economic growth rate of Bangladesh was 6.43% for 2006-07. But there is rather doubtful if Bangladesh can sustain this growth rate over the long run given various factors that affect the economic growth rate particularly impacting natural and physical capital. The trend in growth rate in the table below shows that the economic growth rate is declining steadily even though the real GDP is rising which may be inter-annual phenomenon and impacts of recent disaster particularly two floods and cyclone Sidr in 2007.

The sustained economic growth component of the national sustainable development first looked into current growth rate and challenges, accelerated growth rate suggested under different policy and strategy to meet the development requirements of the country, and then look at the additional component that will ensure sustainability of the economic growth rate in the long-run. Then the strategy suggested what would be the additional requirement to ensure environmental sustainability in over all sustainable development of Bangladesh.

In terms of size and rank of economy, Bangladesh is the 52nd largest economies of the world (Table 5.2, Col 2) and it ranks at 141 of the 172 countries (Table 5.2, Col 3) listed in the World Bank Database in 2006 in terms of per capita income. This is clearly due to its huge population. On the other hand, it ranks at 50 in terms of output per ha of land in the world implying that only 49 countries of the world produce more output per ha of land than Bangladesh. Table 5.2 further shows that Bangladesh's economic performance in terms of output is one of the best in terms of output per ha in this region. India ranks 69th in the world, Sri Lanka is 52nd, Pakistan is 88th in terms of rank. While this is good news for the people of Bangladesh (since the productivity of land in Bangladesh is much higher than other SAARC countries), the challenge of sustainability unfortunately also starts right from here.

Table 5.2, column 6 shows an index of output per ha for all countries with Bangladesh equals 100. It shows that while India, for example, produces 64 units from one hectare of land, Pakistan produces 38 units from one hectare of land, Bangladesh produces nearly 100 units. Such high productivity signifies the pressure that Bangladesh puts on its land (proxy for resources) to feed its huge population. This makes the economy vulnerable in terms of sustainability index. Simply, it means that we, in Bangladesh, put more pressure on our land compared to our neighbours and so we should

Table 5.1: Real GDP of Bangladesh (Major Sectors) in Million Taka

Sectors	2003-04	2004-05	2005-06	2006-07	2007-08 (p)
Agriculture (including fisheries)	558,050	570,367	598,532	625,796	648,400
Manufacturing	390,688	422,690	468,197	513,722	551,833
Wholesale and Retail Trade	337,698	361,552	385,961	416,996	447,018
Transport, Storage & Communication	236,764	255,522	275,922	298,093	323,994
GDP (real)	2,519,680	2,669,740	2,846,726	3,029,709	3,217,855
Growth Rate (real)	6.27	5.96	6.63	6.43	6.21
GDP (per capita in Taka)	18,637	19,489	20,512	21,550	22,597
GDP (per capita in USD)	418	441	447	487	554

Source: BBS Data
Note: (p) denotes provisional

be more careful too to protect the productivity of our land for our future.

Understanding distribution of benefit of economic growth and who this can be improved along with economic growth in future is another area of importance. As the present situation stands, only a handful of people are actually getting benefited by the present economic growth rate. There is a huge disparity among the richest and the poorest of the country and this gap is widening day be day. The degree of inequality of income distribution or distribution of wealth of a country can be measured. Most often the Gini Coefficient of Gini Index is used to quantitatively measure inequality. According to the UNDP Human Development Report 2007, Bangladesh has a Gini Index of 33.4 and this figure is on the rise. The main goal for Bangladesh would hence be to reduce the Gini Index through which poverty reduction and equitable distribution of wealth would be ensured. This is 'pro-poor growth' of the economic sector. The following table shows the percentage of benefits of the bottom 5% of the population compared to the top 5%:

Table 5.2: Ranking of Countries by Major Indicators

Country	GDP	Per Capita Income	Population	Area	Per ha GDP Index	Per ha GDP
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Nepal	108	155	39	86	12.71	113
Afghanistan	107	..	..	38	2.99	153
Sri Lanka	72	109	48	112	95.52	52
Libya	56	43	96	15	6.65	135
Vietnam	53	130	13	61	42.97	82
Bangladesh	**52**	**141**	**8**	**87**	**100.00**	**50**
Pakistan	41	125	6	34	37.61	88
Singapore	40	20	110	163	43,940.21	2
Malaysia	36	48	42	60	104.97	48
Thailand	32	78	19	46	93.41	53
Turkey	17	51	16	35	119.44	45
India	12	122	2	7	64.07	69
Russian Federation	11	47	9	1	13.41	112
Brazil	10	60	5	5	29.15	98
Spain	9	22	28	47	562.88	20
Canada	8	17	35	2	29.13	99
Italy	7	19	23	65	1,422.74	13
France	6	16	20	44	940.04	14
United Kingdom	5	11	21	72	2,237.15	8
China	4	95	1	4	64.60	68
Germany	3	15	14	57	1,892.07	11
Japan	2	14	10	56	2,669.06	7
United States	1	7	3	3	318.54	30

Source: WB Online Data, Calculation by Enamul Haque, 2006.
Note: .. data not available.

Table 5.3: Percentage of Benefits of the bottom 5 % of the Population Compared to the Top 5%

Family Group	2005	2000
National	100	100
Bottom 5%	0.77	0.93
Top 5%	26.93	28.34
Gini Coefficient	0.46	0.45

Source: Bangladesh Economic Review 2007

5.4 Drivers and Sectors for Economic Growth

The economic growth of a nation does not depend on its industrial and business sector alone. Major sectors like agriculture, infrastructures etc are also responsible for either positive or negative economic growth. For Bangladesh, the drivers of economic growth have been identified as agriculture, infrastructure, industry, technology, communication, energy, enabling environment and the informal sector. Negative drivers are adverse impacts of environmental degradation of natural resource base, natural disaster and adverse impacts of climate change emerging as a critical negative driver to economic growth. The sectors that have the highest contribution to the GDP of Bangladesh include a) agriculture, forestry and fisheries, b) industry including manufacturing, c) trade including wholesale and retail, and d) transport, storage and communication.

5.4.1 Agriculture, Forestry and Fisheries

According to statistics published by the Government of Bangladesh, the agriculture sector contributes to about 22% of the national GDP (2005-06). The agriculture sector includes crops, livestock, fisheries and forestry. Agriculture sector generates employment of about 63% of labour force and contributes about one fourth of total export earning and provides food security of the growing population of the country.

Agriculture is still the single largest sector that provides employment, livelihoods and nutrition to the rural people of the country. With global development in agriculture, Bangladesh has also progressed significantly to cope with the increasing demand of the growing population. But the growth in the agriculture sector is marred by annual fluctuations which denote environmental shocks such as floods, droughts and cyclones in the coastal regions. There is potential for development of the agriculture sector through improved technology, extension, proper policy/planning, strategies and management in the context of the global environmental degradation, climate change and natural hazards. The overall growth rate of agriculture sector could be enhanced to at least 5% and the sectoral GDP contribution to at least 25% by 2020. Through critical analysis and review of the present status, trend and potentials, development strategies of different sub-sectors of agriculture sector are formulated to achieve the sustainable development target.

5.4.2 Industry (Manufacturing)

The real GDP from the industrial sector (manufacturing) was Tk 513,722 million in the fiscal year 2006-07. The industrial sector includes the large, medium and small scale manufacturing plants. The manufacturing sector has been growing steadily at the rate of 8% for the past 7 years. The growth in the small scale manufacturing has been greater in recent years.

Primary textile sector (PTS) has emerged as a self reliant sector to supply textile products to meet the fast growing demand for domestic consumption and export. Sericulture and Silk Sector activities in which both public and private sector stakeholder's particularly poor rural people are involved is also an important focus. Government institutions like Bangladesh Sericulture Board (BSB), Bangladesh Sericulture Research and Training Institute (BSRTI), and Bangladesh Silk Foundation (BSF) are working to promote and provide extension services to meet the challenges for the future. The sericulture sector in particular, carries significant potential for poverty reduction but such potential remains largely unrealized till today.

5.4.3 Trade (wholesale and retail)

Bangladesh's trade policies are devised keeping in view both medium-term imperatives and long-term development outlook. Trade is considered as a component of overall development policy. Sustained export growth will help maintain a favourable trade balance on the one hand, and contribute positively to GDP growth on

the other and will lead to poverty alleviation through increased employment and income. One of the key sectors for export success has been the RMG sector.

The Government of Bangladesh will continue to play its role as the facilitator of the growth of RMG exports by providing a range of generous support policies such as back-to-back LCs, and bonded warehouse facility. The commitment of the government to use this sector both for poverty reduction, employment creation and also for economic growth is evident in its policies.

The government has been working with US government, EU governments to increase its market access for this sector. To deal with the problems of the RMG sector on a priority basis a National Coordination Council (NCC) has been working. Government has now formed the Better Business Forum (BBF) to build confidence among the business leaders and to receive feedback from them.

However, the major challenge of the sector is to ensure that the workers involved in the sector remain content and facilities, working environment as well as health and safety standards continue to rise.

The informal sector, including small-scale processing and manufacturing and various informal services is responsible for a large share of the GDP and employs about 78% of the labour force. This is a labour intensive sector and accelerated growth in this sector has contributed to increased growth and employment generation. This has largely been a demand driven sector arising from agricultural growth, export of RMG (readymade garments) and export flow.

5.5 External Income Sector

External income particularly remittance is important to make balance in foreign currency reserve and payment. The remittance has grown over time and has increased from 9.9 percent to 18 percent in the year 2007. However, the challenges facing by the sectors are a) lack of training to exploit skilled labour market, b) lack of support to protect labour right abroad, and c) lack of governance. This sector has huge potential in future that need strategic approach to exploit this potential. This can support a large portion of the growing population of Bangladesh and can also make signification contribution to the economic development.

5.6 Economic Growth and Poverty Alleviation

Economic growth performance and engagement of poor people to get benefit of economic growth suggested that broad based growth in all sectors of the economy, especially the sectors generating productive employment for the poor creates more benefits for the poor. The three broad sectors for Bangladesh for pro-poor economic growth are agriculture, industry and trade which have contributed to the growth of the economy and its acceleration as well job creation.

Poverty alleviation has been a priority and key objective recognized by relevant policy and planning documents of the government of Bangladesh since the emergence of the country as an independent nation in 1971. Given the prevalence of widespread poverty, hunger and deprivation, poverty alleviation has been a major focus of the country's development plans along with overall socioeconomic objectives and goals. Poverty alleviation has been made a core issue with the adoption of National Strategy for Accelerated Poverty Reduction. A pro-poor growth strategy i.e. growth that benefits the poor is emphasized through the policy document. Despite all efforts and implementation of various programmes and projects, poverty still poses a serious challenge to the goal of country's development

5.7 Rapid Economic Growth - a Pro-poor Strategy

Creating nearly 3.3 millions jobs a year for the people of Bangladesh has been one of the key policy targets of the government. Current strategies include continuation of Food for Works (both cash and kind), reallocation of government-owned land in favour of the landless population engaging the women in the rural road maintenance, vocational training to generate self-employment, programs for the marginalized population, seasonally unemployed population and for the monga drive population, providing garment workers with a welfare fund and retrenching of workers.

However, there are other major policy initiatives to achieve these targets. These

include, mobilization of savings and investment from within and outside the country, improving the supporting role of the public sector to facilitate investments, increasing the flow of FDI, developing skills relevant for the needs of the private and public sectors, enhancing the quality of opportunities for women in the job markets, facilitating technological updates in the industries, improving the business environment, ensuring compliance with the labour standard and maintaining the work environment, improve the credit policies for SMEs, and guaranteeing the macroeconomic stability for future years.

5.8 Sustained Economic Growth: Challenges

Ensuring sustainable economic growth in the long-term is an extensive challenge for Bangladesh. Sustained economic growth needs macro–economic stability which is characterized by high economic growth, low and stable inflation, low budget deficit, sustainable external balance and high productive employment. Maintenance of macro-economic stability requires prudent fiscal and monetary policy and supportive external sector policy.

Challenges that need to be overcome to attain sustained economic growth are:

- Ensure that the goals of the MGD are fulfilled.
- Ensure poverty reduction and the goals of the National Strategy for Accelerated Poverty Reduction
- Look at the drivers and sectors that have major impact on economic growth and ensure their sustainability and growth.

Some of the major problems that need to be overcome to ensure accelerated economic growth suggested are:

- Rising inflation rate: This is particularly important because the negative impact will be on the poor as it will erode their purchasing power.
- Bangladesh's competitive power in the global markets: Over the past few years Bangladesh has faced increased competition in its export especially from China and other major RMG exporting countries. The only way Bangladesh can survive is to improve competitiveness in the export sector through reduction in costs of doing business, upgrading skills and reducing lead time.
- Employment: providing employment to the growing labour force is a major challenge.
- Environmental shocks: Natural disasters and environmental degradation has a major impact on the growth rate of the economy. This is reflected in the lowered growth rate observed in the years after extreme events like floods, drought and cyclones. The incidences of these events are likely to rise due to climate change impacts. Other environmental factors include pollution and degradation of natural resources like soil, water, biodiversity etc.

5.9 Strategy for Sustained Economic Growth

Strategy defines as a long term plan of action designed to achieve a particular goal and in most often "winning" options. There are number of strategies that Government of Bangladesh is promoting to accelerate growth. These are firstly supportive macroeconomics to ensure rapid growth with particular focus on stable macroeconomic balances, improved

Table 5.4: Employment Projections (million persons), FY03-08

	FY03	FY04	FY05	FY06	FY07	FY08
Total Employment	44.30	46.73	48.92	51.69	54.75	58.08
Rural	33.60	34.96	36.64	38.30	40.35	42.57
Urban	10.70	11.77	12.28	13.39	14.40	15.51
New Employment	-	2.43	2.19	2.77	3.06	3.33
Rural	-	1.36	1.68	1.66	2.05	2.22
Urban	-	1.07	0.51	1.11	1.01	1.11

Source: PRSP Calculations

regulatory environment, higher private investment and increased inflow of FDIs, effective trade and competition policies, and, poor and gender sensitive budgetary process; and secondly, choice of critical sectors to maximize pro-poor benefits from the growth process with special emphasis on the rural, agricultural, informal and SME sectors, improved connectivity through rural electrification, roads, and telecommunications.

The challenge of sustained economic growth of Bangladesh economy is to ensure accelerated growth at the same time ensuring environmental and social sustainability. It therefore, includes nurturing all the four types of capital in an economy so that the capacity to produce in the future is not diminished. These four types of capitals are: a) natural capital, b) physical capital, c) human capital and d) social capital. Natural capitals are defined as the existing stock of forests, fisheries, water, mineral/gaseous resources, and the quality of environment. Physical capitals are defined as the stock of infrastructure and capital, human capitals are the stock of human resources including its quality, and social capital is the network of individuals and social norms which are important ingredients for continuation of delivery of services and output in the country. The following table suggested strategies for Bangladesh to ensure sustained economic growth along with environmental and social sustainability.

Table 5.5: Sustainable Development Strategies for Sustained Economic Growth

Economic Growth Sector	Strategy for Growth Sustainability	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Macro Economic Aspect	• Regulatory structure should emphasis growth of the capital markets so that it acts as a vehicle for reduction of poverty, promotion of employment and increased production reduce burden on land	• Attracting FDIs with technologies that are environment friendly • .	• Ensure regional balance in investment from private and public sector	• Private and public sector development policies shall be regulated with appropriate environmental regulations to protect the rivers, fresh water reservoirs, lakes, forest resources and also the quality of soil • Ensure good governance in Private and Public Sector and Foreign Direct Investment • Institutional and human capacity building to facilitate investment and absorb capital
Agriculture, Fisheries and Livestock	• Increase total productivity of per unit of natural capital to cope with physical loss of productive natural capital; • Development and ensure implementation of a comprehensive National Land-use Plan; • Protection of agriculture, fisheries and livestock from exiting natural shocks and variability, and future trend of change including adverse impacts of climate change; • Ensure supply of quality agricultural inputs including energy supply for irrigation.	• Improve quality of productive natural capital and arrest future degradation of quality; • Promote ecosystem based appropriate agriculture to ensure diversity;	• Engage marginalized and different ethnic group in production system;	• Ensure environmental governance

Table 5.5: Sustainable Development Strategies for Sustained Economic Growth (continued…)

Economic Growth Sector	Strategy for Growth Sustainability	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Manufacturing Industries	• Create enabling investment environment by private sectors to accelerate growth; • Promote growth of Textile, Pharmaceutical, Pulp, Cement, Tannery, Agro-based Resource Industry and Rubber • Promote growth of Small and Medium Entrepreneurs (SMEs)	• Ensure Environment Friendly Technologies (a) Clean Production Technology, b) Effluent Treatment Plant) are being introduced depending on scale and needs of the industries. • Protect biodiversity for growth of manufacturing and industrial activities	• Training modules of garments workers should also look into use of dye and ensure that the water bodies are not contaminated with its effluents • Ensure safety in terms of public health, and protecting workers right • Promoting quality of education to develop human capital for the future of the nation	• Review and update the National Industry Policy • Enactment of industrial rules and regulations through proper monitoring system
Transport, storage and communication	• Ensure need based investment in transportation, storage and communication	• Conserve productive and protective natural capital and ecosystem	• Investment should be supportive to livelihood of rural community	• Political influence must be avoided
Energy Sector Development as key driver to Growth	• Sustainable use of gas resources shall be ensured through appropriate regulatory as well as incentive approaches • Improvement in the energy efficiency in the production and consumption shall be encouraged through incentive mechanisms • Private investment in the energy sector must not compromise the national objectives and policies in terms of energy resources	• Promoting investment in the SETs including Solar energy, wind energy and also in the use of renewable energy sources.	• Promote access to energy services	• Political influence must be avoided

6.1 Introduction

Historically the agriculture sector is playing significant role in the development of Bangladesh and employing large number of rural community directly. It is also supporting employment in the urban areas. The economy of Bangladesh is largely dependent on performance of agriculture. About 80% of the population of the country live in rural area and are directly or indirectly engaged in a wide range of agricultural activities those include crop & vegetables, fisheries, livestock and forestry. Agriculture sector presently (2006-07) contributes 21.37% to the GDP (Crop-12.00%, fisheries-4.73%), livestock-2.88% and forestry-1.76%, Table-6.1), which was about 26% in 1996-97 and subsequently shown a sign of gradual decline. Since 2000-01, major drop in crop agriculture from 15.21% in 1996-97 to 12.19% in 2005-06 while other sub-sectors (fisheries, livestock and forestry) are maintaining more or less the same levels. GDP growth rate of agriculture sector is varying between 2.2 and 4.5% during the last one decade against the national GDP growth rates varying from 3.3% to 6.9% during the same period (Table-6.2). Agriculture sector generates employment of about 63% of labour force and contributes about one fourth of total export earning and provides food security of the growing population of the country.

However, agriculture is still the single largest sector that provides employment, livelihoods and nutrition to the rural people of the country. With global development in agriculture, Bangladesh has also progressed significantly to cope with the increasing demand of the growing population. There is potential for development of the agriculture sector through improved technology, extension, proper policy/planning, strategies and management in the context of the global environmental degradation, climate change and natural hazards.

6.2 Objective of Agriculture and Rural Development

The objective of agriculture and rural development in the context of sustainable development is to enhance growth rate of the agriculture sector to ensure "self-sufficiency in food production and maximization of non-

Table 6.1: Contribution of Agriculture by Sub-sectors to GDP

Sectors	**Contribution to GDP in percentage (GDP at constant price-base year 1995-96)**											
	1996-97	**1997-98**	**1998-99**	**1999-00**	**2000-01**	**2001-02**	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**2006-07**	**2007-08[1]**
Crop Agri-culture	15.21	14.59	14.33	14.59	14.70	13.75	13.43	13.23	12.51	12.28	12.00	11.70
Fisheries	5.48	5.67	5.93	6.09	5.51	5.40	5.25	5.11	5.00	4.86	4.73	4.64
Livestock	3.27	3.19	3.12	3.02	2.95	2.96	2.93	2.91	2.95	2.92	2.88	2.79
Forestry	1.91	1.89	1.90	1.88	1.87	1.88	1.86	1.83	1.82	1.79	1.76	1.75
Total	**25.87**	**25.34**	**25.28**	**25.58**	**25.03**	**23.99**	**23.47**	**23.08**	**22.28**	**21.85**	**21.37**	**20.88**

Source: Bangladesh Economic Review, 2006 and 2008

Table 6.2: Average Growth Rate (in percent) at constant price (1995-96)

Sector	**1980-81**	**1985-86**	**1990-91**	**1995-96**	**2000-01**	**2005-06**
Agriculture	3.31	3.31	2.23	3.10	3.14	4.49
Industry	5.13	6.72	4.57	6.98	7.45	9.56
Service	3.55	4.10	3.28	3.96	5.53	6.47
GDP (At producer prices)	3.74	3.34	3.24	4.47	5.41	6.91

Source: *BBS, Bangladesh Economic Review, 2006 and 2008*

[1] Projected

farm activities" to employ active labour force in the rural area. It is suggested that the overall growth rate of agriculture sector could be enhanced to at least 5% and the sectoral GDP contribution to at least 25% by 2030. It is also important that achieved growth need to be sustained over time and deliver environmental and social sustainability. For rural development ensuring availability of food to meet all people's need at prices commensurate with their income is also challenging. Through critical analysis and review of the present status, trend and potentials, sustainable development strategies of different sub-sectors of agriculture are formulated to achieve the project growth and rural development in the context of sustainable development.

6.3 Agriculture Crop Sub-Sector

The crop sub-sector of agriculture sector is the second single largest economic activity in the country. The sub-sector contributes 12.19% to the national GDP and 56% to agricultural sector GDP. About 50% of labour force is engaged in this sub-sector. The sub-sector has grown very rapidly during the last 3 decades. Rice is the major crop occupying 75% of total cropped area (14.3 million hectare arable area). Food-grains production has significantly increased from about 9 million ton in 19 years to about 25 million ton in 2004. Though the cultivable land area has already declined, modern varieties of crops have been cultivated in about 60% cultivable land (rice- 70%, wheat-100%, maize-100%, potato-70%, winter vegetable-70%).

6.3.1 Present Production, Availability and Requirement

Production of rice is the principal agricultural activity as more than 80 percent of the cultivated land is under rice cultivation. Since self-sufficiency in food-grains has received priority under the national development plan production of rice has increased significantly over the years. Annual production of rice increased by 5.7 percent in the 1990s, soaring from 17.86 million tons in 1990 to 24.90 million tons in 2000, an increase of 31 percent over the decade. It has further increased to 27.32 million tons in 2006-07. Although wheat contributes a small share in total food grain production, there has been rapid growth in the production of wheat relative to rice. Annual production of wheat increased more than two-fold from 0.89 million tons to 1.84 million tons between 1990 and 2000. However, production is showing sharp declining in the last 7 years. The wheat production was 0.73 million tons in 2006-07. It is also important to note that maize production is showing increasing production which has increased to 0.89 million tons in 2006-07 from 0.15 million tons in 2001-02.

The production of pulse has stagnated over the years. Annual production of pulse increased from 0.49 million tons in 1990 to 0.52 million tons in 1995 but declined to 0.50 million tons in 1998. The trend shows that the production of oil seeds and spices have either stagnated or declined. The production of sugarcane has also gone down over the years. The production of potato, however, shows an increasing trend over the years. Annual production potatoes increased from 1.06 million tons in 1990 to 1.55 million tons in 1998, an increase of 46 percent over the eight years.

6.3.2 Productivity and Food Security Situation by 2030

Agriculture is the main stake of the Bangladesh economy, supplies 90 percent of the food we consume and provides employment of 63 percent of the population. Significant achievements have been made in crop production in Bangladesh however, yields of major commodities are still low in the region—yields of rice (clean) and wheat are less than three tonnes/ha. Level of fertilizer consumption is moderate and extent of farm mechanization is also low.

After achieving favourable growth during couple of decades and recent success in cereal production the present day agriculture is at cross road with the second generation problems and facing challenges of feeding increased population with the shrinking and degraded natural resources and globalisation. Bangladesh imports cereal and edible oil to feed the growing population but imports depends on in country production. It has to substitute import considerably by augmenting food supply. The task is enormous but has to be addressed.

6.3.3 Demand and Supply Projection

The question of how much will be the future demand of food items in Bangladesh during 20 and 30 years from now is complex and the answer is linked with number of factors, few of them are a) rate of population growth, b) income growth and food habit, c) internal and external trade regime.

Number of attempts has been made to estimate the future demand of agricultural commodities considering the above factors. Accordingly, assumptions have also been made in terms of population growth (1.6 at present and expected to decline further after 2010) and income, demand elasticity etc. Some projected the demand using the daily energy requirement, others based on the daily requirement of individual items. Hence, the projected values remain gross.

Spices, pulses and oilseed are in deficit in the total production system and the demand is met through considerable import. The shrinkage of area under these crops and lack of thrust on these commodities pose this import dependency. Pulse is the major protein of the people and country is importing 70% of the available demand. For edible oil, similar production situation also prevails and the gap is being filled by significant import.

According to the projection, the requirement of food-grain in the country would be 41.6 Mt in the year 2030. Therefore, to become self-sufficient in food-grain production in year 2030, additional 14.64 Mt would be required. However, the increased vulnerability to crop production due to changes in climate system would not allow the farmers of the country to provide food-grain for the millions of their fellow citizens. Unless appropriate anticipatory adaptation measures are considered now, food-grain self-sufficiency would remain a distant dream for the country.

Table 6.3. The minimum daily requirement per person of food items in gram

Items	Requirement (gm)
Rice	390
Wheat	100
Vegetables	225
Pulse	30
Edible oil	20
Spices	10
Fruits	50
Sugar	10
Fish	45
Meat & egg	34
Milk	30

Source: Krishi Commission, 1999

Table 6.4. Projected demand of food, based on the gross income growth rate of 5% in million MT.

Year	2000	2010	2020	2030
Population	130	153	172	210
Cereals, rice, wheat & maize	26.96	29	34.6	41.6 (1.3)
Pulse	0.38	2.2	3.0	4.0 (3.5)
Sugar and Gur	0.60	0.91	1.4	2.9 (4.0)
Potato & tuber	3.57	4.0	4.5	5.0 (2.7)
Vegetables	1.2	2.0	2.5	3.0 (3.0)
Fruits	2.2	3.0	4.6	5.3 (5.5)
Edible oil	0.124	0.8	1.0	1.4(4.4)
Milk	1.6	3.2	4.8	5.9 (5.0)
Fish	1.6	3.18	3.5	4.0 (4.3)
Meat	0.62	1.4	2.4	2.8 (4.3)
Eggs, million no.	3554	6000	9500	12000

Figures in the parenthesis represents required growth rate (per cent increase per year)

6.3.4 Present Challenges

Ensuring food security is one of the major challenges that Bangladesh faces today. Despite significant achievements in food-grain production, food insecurity both at national and household level remains a matter of major concern for the Government. Currently, about half of the population lives below the "food-based" poverty line (consuming less than 2,122 kcal/capita/per day) and one quarter of them subsist in extreme poverty (less than 1,800 kcal/capita/per day). Apart from the prevailing deficit in total calorie intake, the normal diet of Bangladeshi people is seriously imbalanced, with inadequate shares of fat, oil and protein and with more than 80 percent of the calories coming from cereals. Women and children are especially vulnerable due to their greater nutritional requirements. Moreover, large segments of the population periodically undergo the distress of transitory food insecurity caused by drought, floods, cyclones and other natural disasters. Thus, food insecurity and malnutrition are fundamental characteristics of the lives of the poor in Bangladesh.

It is evident that the food-grain production has reached in self-sufficiency level at national scale under normal climatic and weather condition. However, the distribution and access to the food grain by household has yet to be ensured. A recent study revealed that about 38 per cent of the rural households have no land and mainly involved in wage labour known as poor. There are another 42 percent households have little land and involve with agricultural activities and wage labour known as moderate poor. The poor households face food deficit round the year and moderate poor households face food deficit at least 4-6 months in every year. This gives an indication of socio-economic condition of the rural households and level of access to food though the country has reached self-food sufficiency in terms of production.

Climate change and variability over a long period of time is pronounced and its impact is being observed globally. However, the severity of the impact varies widely, and Bangladesh is likely to be affected in terms of food security and more land will be prone to higher level of inundation due to sea level rise.

In the next 30 years, climate change of a moderate magnitude will have direct impact on food production with the enhancement of temperature and carbon dioxide and anticipated moisture stress. Other impacts are associated with salinity increase in the onward coastal zone and crop production loss due to inundation of the cropland.

Bangladesh is presently facing a serious challenge in agricultural production to feed the growing population in the context of shrinking agricultural land and climate change impacts. The population has been projected to grow to 191 million in 2030 from the current 140 million. The major challenges for increased growth and production for agriculture sectors are:

- Arresting conversion of good agricultural land into non-agricultural purposes. It is to be noted that about 1000 hectors of agricultural lands are being converted into non-agricultural purpose every year;
- Reversing trend of nutrient mining and depletion of soil organic matter due to mono-culture in intensive crop agriculture;
- Utilization of countable area of agricultural land that remains fallow or seasonal fallow in drought prone, flood prone and coastal area due to environmental stress factors which will be aggravated further due to climate change;
- Lack of location specific production packages and agricultural technologies to facilities growth of agriculture sector;
- Reduction of yield gap and large scale adoption of proven agro-technologies at farm level which need adequate training at farmer level;
- Unavailability of adequate quality seeds;
- Lack of marketing facilities and Farmer's Group.

6.3.5 Future Strategies for Crop Agriculture

In Bangladesh, agricultural growth will continue to remain the engine for overall economic development in the foreseeable future. Considering that it is people who are to keep development wheel rolling and sustainable, the strategies for agricultural research and extension would continue in future to feed the growing population giving

more thrust on science based agriculture.

The present strategic plan attempts to provide a direction to search for possible ways and means in the agricultural sectors. The backbone of country's economy, which could be exploited for ensuring economic emancipation and food security for the growing populace without disturbing and degrading environmental and ecological security. Table 6.5 has provided a list of strategies for crop agriculture to ensure increased growth rate along with environmental and social sustainability of the sector.

Table 6.5: Sustainable Development Strategy for Crop Agriculture Sub-sector

Agriculture and Rural Development	Strategy for Food Grain Self-sufficiency	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Crop Agriculture: Increase productivity through different measures and actions; Enhance farming system	• Reduction of yield gap and large scale adoption of proven agro-technologies at farm level. • Expansion of existing suitable crop varieties to risk prone areas (e.g. drought, flood, salinity, char-lands and tidal surge and submergence areas). • Strengthen the distribution system for timely supply of agricultural inputs including energy and banking support. • Contingency plan to ensure supplementary irrigation to deal with severe and extremely severe drought. • Ensure benefit of subsidy for the farmers • Promote agriculture diversification and improved agricultural technologies.	• Development of agro-ecosystem specific production packages including integrated nutrient and pest management programs for land and soil health enrichment. • Enhance efficiency of water use including irrigation network and on-farm water management. • Promote compressed natural gas, solar energy and electricity driven pump instead of diesel driven pumps. • Promote agro-forestry practices where general crop cultivation is not feasible • Enhance storage capacity of surface water system and harnessing rainwater for agricultural use • Practicing crop specific balanced fertilizer until major switch over to organic farming practices. • Efficient use of land and water resources for sustainable agricultural production • Consecutive use of surface water and ground water for irrigation • Use rubber dam and other innovative irrigation system	• Use indigenous technology and knowledge (ITK) • Strengthen women participation in homestead gardening, production of vegetables, fruits and spices. • Develop storage facilities of agriculture of crops specially cold storage facilities at local community/local markets • Seed preservation at farmers' level will continue so that the farmers can easily use good quality seeds under the supervision of DAE.	• Development and implementation of crop zoning • Development of varieties including non-rice crop to deal with future intensity of drought, flood, salinity, tidal surge and submergence. • Need based research and development of varieties • Strengthening of HRD, institutional capacity, conservation and screening of germplasm and developing necessary infrastructures. • Development of policy for genetic improvement of crops through development of hybrid crops, tissue culture and environment friendly biotechnologies.

6.4 Fisheries Sub-Sector

Fisheries sector of Bangladesh also plays significantly role in the country's economy, employment generation, nutrition supply and export earning. It contributes about 5% to the country's GDP, 4.7% to the total export earning and about 63% to annual protein intake in the diet of the people. About 10% of the country's population depends on fisheries for their livelihoods. It is the 2nd highest export earner of the country after readymade garments.

Bangladesh is bestowed with vast inland open waters measuring 4.05 million ha and 0.3 million ha closed water in manmade ponds and enclosures for aquaculture and 1,66,000 km2 marine water in the Bengal extending up to 200 n miles in the EEZ with high potential of fish production.

The fisheries sector has two major production systems (a) the capture or natural fisheries production systems and (b) aquaculture/fisheries system in closed waters and enclosures. The capture fisheries has again two geo-ecological systems viz (i) Inland capture fisheries and (ii) Marine /coastal fisheries.

6.4.1 Present Status and Trend of Fisheries Sector

Present (2006-07) fish production is 2.44 million metric tons (inland capture 1.01 million metric tons, Aquaculture 0.94 million metric ton, Marine 0.49 million metric ton). Per capita fish consumption is 16 kg/per year. Quantity of export of fish and fish products during 2005-06 was 68,829 metric tons (shrimp 49,317 metric tons and fish 19,512 metric tons) with annual export earning Tk.3020 crore. Table 6.6 shows production of fish from 1996-07 to 2006-07 which show that annual growth rate is showing decreasing trend.

Inland capture fisheries was the major source of fish production in the past but it has declined during the last 3 decades due to mainly over fishing and destructive fishing in absence of proper policy planning and management, and loss & degradation of fish habitat/ecology due to human intervention and natural causes. While the aquaculture in inland and coastal waters have grown rapidly at an average annual rate of 26% during last 2 decades with technological improvement and extensive extension service. The marine fisheries has increased steadily at an average annual rate of 6.5% during same period with improvement of fishing technology and

Table 6.6: Fish production by types of fisheries

Type of water/ fisheries		***Fish production in '000 metric tons***										
		1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07
1	Inland capture fisheries	599.9	615.9	649.4	670.5	688.2	688.4	709.3	731.1	859.3	956.7	1006.7
2	Aquaculture	485.8	574.8	593.2	657.1	712.6	786.6	856.9	914.7	882.1	892.1	945.8
	a) Fresh-water Aquaculture	4.6.8	486.8	503.1	564.7	619.6	689.0	756.1	800.1	761.3	764.1	816.6
	b) Shrimp Aquaculture	79.0	88.0	90.1	92.5	93.0	97.6	100.8	114.6	120.7	127.9	129.2
3	Marine Fisheries	274.7	272.8	309.8	333.8	379.5	415.4	431.9	455.2	476.6	479.1	487.4
Country Total		1360.4	1463.6	1552.4	1661.4	1781.1	1890.4	1998.2	2102.0	2215.9	2328.5	2440.0
Annual growth rate of production (%)		8.15	7.58	6.07	7.02	7.20	6.14	5.70	5.20	5.42	5.08	4.79

Source: Bangladesh Economic Review, 2006 and 2008

increasing fishing effort resulting out of rapid population growth. Some of the marine fisheries resources are being exploited at MSY level with sign of decline of some species like tiger shrimp which is exploited at a higher rate for export, while deep sea pelagic resources are yet to be explored and exploited. Fresh water aquaculture though growing rapidly needs proper management and regulatory regime for sustainability from bio-technological, environmental and social point of views.

The overall annual growth rate of fisheries sector has been about 8.5% during the last one decade though the annual growth rate has shown a decreasing trend in recent years. However, fish bio-diversity has been affected. According to IUCN about 54 species of fishes are endangered, of which 12 species are critically endangered or extinct. There has been a qualitative degradation of fish resources. Valuable species like Indian major carp, cat fish etc. have declined alarmingly.

Government has a national policy for fisheries sector and has recently formulated national strategy for the sector in order to achieve the policy objectives of the sector. The policy objectives of the fisheries sector are (i) Enhancement of the fisheries resources and production, (ii) Meet the demand of animal protein, (iii) Poverty reduction and improvement of socio-economic condition of the poor and landless through employment generation, (iv) achieve economic growth and earn foreign exchange, (v) Maintaining ecological balance, conserve biodiversity and improve public health.

Various Government agencies/Ministries are involved in the fisheries sector. The Ministry of Fisheries and Livestock supported with DOF, BFDC and BFRI is the lead agency responsible for management and development of the sector to achieve the policy objectives of the sector, while other Ministries/Departments such as MOL, MOWR, MOA, MOEF, BWDB, DOE, Planning/Finance and Administrative and law enforcing Departments are also directly and indirectly linked with the fisheries sector. There is lack of cooperation and coordination among those agencies creating barrier for proper development and management of the fisheries sector. However, the entire production and harvesting system of fisheries resources including handling, transportation, processing, marketing etc. are at the hands of the private sector, while the role of the Government are mainly promotional and regulatory covering (a) Research for technological development and management, (b) Extension and training, (c) Advisory service, (d) Formulation and implementation of policy, plan and strategies (e) Implementation of laws and regulations, (f) Supervision and monitoring.

In most cases the Government efforts for development of the sector could not be effective and sustainable due to lack of proper policy planning, institutional weaknesses of the lead agencies, non-involvement of the community in planning, management of the fisheries resource. The fisheries sector is very complex in nature with multiples of resources division such as (i) Aquaculture in Freshwaters, (ii) Shrimp Aquaculture, (iii) Inland Capture Fisheries, (iv) Marine Fisheries, which for their proper development and management require various support services namely (i) Extension and Training, (ii) Quality Control and Marketing, (iii) Policy, Regulation and Institutional, (iv) Human Resource Development – Education and Training, (v) Environmental Management, (vi) Research and Development, (vii) Monitoring and Evaluation.

There is not much scope of enhancing the fish production from inland open water fisheries (inland capture fisheries). However it would be rather sufficient if the production could be retained at the present level with qualitative improvement through adopting proper measures on a sustainable basis. Marine fisheries have still some scope of increasing fish production if deep sea pelagic resources are available/ explored properly. However, there is still much scope of increasing production from aquaculture both in freshwater and coastal/estuarine water through improvement of technology and expansion of aquaculture area. The annual growth rate of fisheries production has gradually decreased from 8.15% in 1996-97 to 4.97% in 2005-06. For the last 5 years the production growth rate is almost stable around 5%.

During last one decade fisheries share to GDP varied between 6.09% and 4.86%. By next one decade or so (2020), fisheries may

maintain the level at around 5% if proper policy strategies are adopted and implemented. And for this purpose the present fisheries sub-sectoral annual growth rate should be maintained at 4-5%.

Based on the requirement of animal protein and considering the present contribution of animal protein from different sources such as meat, milk, eggs and fish, the present (2007) fish demand (Population 143.91 million - BBS 2006) is 2.73 million (2.59 million m. ton for local consumption and 0.14 million m.ton for export and other uses) against present production of 2.44 million m.ton. Present gap is about 0.29 million m.ton. By 2020, projecting the population at 170 million (WB/BCAS-1998) and taking per capita annual consumption at 18 kg, the requirement of fish would stand at 3.26 million m.ton (3.06 million for domestic consumption and 0.20 million m.ton for export and other uses).

If the fish production increases at the present annual growth rate of 5%, the estimated production by 2020 will stand at 4.59 million tons or if the annual production growth rate is taken at 4% then the estimated fish production by 2020 will be to the tune of 4.06 million metric tons. In the event of such situation per capita fish availability and export may be increased.

6.4.2 Challenges of the Fisheries Sector

The sector faces various challenges and constraints for sustainable development. The challenges and constraints are:

i. Overexploitation of capture fisheries due to increased fishing pressure by the rapidly growing population;

ii. Loss and degradation of fish habitat by natural and human interventions such as FCD/FCDI projects, industrial and agri-pollution of water, siltation water bodies;

iii. Environmental degradation, climate change and natural hazards;

iv. Ensuring safely and quality of fish and fish products for exports;

v. Shrimp disease in coastal aquaculture, inbreed and hybrid in fin fish hatcheries;

vi. Lack of proper policy and plan. Revenue oriented leasing system of water bodies (Jalmohal) by MoL, that indulges destructive and over fishing;

vii. Lack of coordination among different Govt. agencies;

viii. Institutional weakness of the organizations namely DOF, BFRI, BFDC responsible for development and management of fisheries resources i.e (a) Lack of sufficient manpower for implementation of laws and regulations and for extension (b) Shortage of fund and other logistics to carryout the activity of the sector.

6.4.3 Potentials, Opportunities and Targets

There is no scope or less scope of enhancing the fish production from inland open water fisheries (inland capture fisheries). However it would be rather sufficient if the production could be retained at the present level with qualitative improvement through adopting proper management measure on sustainable basis. Marine fishery has still some scope of increasing fish production if deep sea pelagic resources are exploited properly. However, there is still much scope of increasing production from aquaculture both in freshwater and coastal/estuarine water through improvement of technology and expansion of aquaculture area. The annual growth rate of fisheries production has gradually decreased from 8.15% in 1996-97 to 4.97% in 2005-06. For the last 5 years the production growth rate is almost stable around 5%.

During last one decade Fisheries share to GDP varied between 6.09% and 4.86%). By next one decade or so (2020), Fisheries may maintain the level at around 5% if proper policy strategies are adopted and implemented. And for this purpose the present fisheries sub-sectoral annual growth rate may have to be maintained at 4-5% subject to reaching at the maximum production capacity.

Based on the requirement of animal protein and considering the present contribution of animal protein from different sources such as meat, milk and egg, the present (2007) fish demand (Population 143.91 million - BBS 2006) is 2.73 million metric tons (2.59 million m. ton for local consumption @ 18

kg/person per day and 0.14 million metric tons for export and other uses) against present production of 2.44 million metric tons. Present gap is about 0.29 million metric tons. By 2030, projecting the population at 191 million (WB/BBS-1998) and taking per capita annual consumption at 18 kg, the requirement of fish would stand at 3.82 million metric ton (3.44 million for domestic consumption and 0.40 million metric ton for export and other uses).

Taking maximum sustainable production potentials of the sector, the maximum sustainable production may be about 4.00 million metric tons, which could be achieved by 2020 with present annual slowly retarding growth trend.

6.4.4 Review of Existing Policy / Strategy and Regulations with Suggestions

The National Fisheries Policy 1998 and the National Fisheries Strategy 2006 address almost all fields and issues of fisheries sector. They cover all fishers production systems such as (i) Inland capture fisheries, (ii) Freshwater aquaculture, (iii) Coastal fishing aquaculture and (iv) Marine fisheries (industrial and artisanal) and the related issues and services namely (i) Research and development, (ii) Extension and Training, (iii) Education, (iv) Fish handling transportation and marketing, (v) Processing and quality control and food safety, (vi) Trade – Export and Import, (vii) Fisheries credit, (viii) Credit, Tax holidays both Govt. incentive and support, supports to industry/entries, (ix) Cooperating, (x) Institution and legal framework, (xi) Insurance, (xii) Environment, (xiii) monitoring and Evaluation.

The present fisheries regulations do not cover Aquaculture which need proper regulation for its sustainable development on biological and environmental issues. However, the policy and strategy of fisheries sector address those issues.

The national policy and strategies cover environment management but they do not address the climate change issues and mitigatory measures.

Inbreed and unplanned hybridization in fish hatchery and use of harmful chemical and medicine in aquaculture system need to be bought under regulation in order to avoid fish diseases, retarded growth, human health hazards etc.

As a result of global climate change unusual floods, cyclones, tidal surges are becoming very common recent years and these are causing great loss/hazards to aquaculture and also fishers lives and property. Mitigative measures need to be taken in aquaculture system and for the fishers against such hazards. To protect, particularly the coastal shrimp farming from cyclone and tidal surge, high embankment need to be constructed where necessary.

Fish feed is an important component of modern aquaculture. Various types of chemical/ medicine/ antibiotic, growth hormones harmful for human body are used in fish feed. Policy does not cover fish feed quality issue. However the national fisheries development strategy focuses on the quality issues of fish feed.

The national fisheries policies and the fisheries development strategy have addressed almost all issues/aspects of fisheries sector development and management except some aspects as mentioned above and are included in the overall development strategy as delineated in this report.

6.4.5 Fisheries Development Strategies

Considering the existing policies, programmes and strategies of the fisheries sector and the field/ issues not covered under the existing ones, strategic approach and policy issues are highlighted in table 6.7.

Table 6.7: Sustainable Development Strategies for Fisheries Sub-sector

Agriculture and Rural Development	Strategy for Enhance Growth	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Inland Capture Fisheries: Sustainable productions and socio-economic development of poor fishing community	• Introduction of improved management and conservation for fisheries through development of a comprehensive inventory of capture fisheries (area, category, and production potentials). • Enhance breeding stock/ recruitment through establishment of fish sanctuary. • Enhance production through stocking of fingerling (culture-based fisheries) where natural recruitment cannot support the productivity potentials of the water body.	• Introduction of biological management instead of revenue oriented leasing system • Conserve and restore the environment/ecology of water bodies favorable for fish habitat, fish migration, recruitment / breeding, feeding and growing of fish and other aquatic resources. • Development of regional cooperation for management of cross boundary rivers. • Control fishing effort at maximum sustainable yield level in capture fisheries	• Engagement of local community and involvement of Local Government. • Establish community organizations and ensure direct licensing system to fishing community. • Ensure capacity building of the fishing community •	• Ensure proper enforcement of inland fisheries rules and regulations • Establish a National Resource Management Committee with all the ministries linked with fisheries resource for better coordination and proper planning. • Establish regulatory framework for ensuring production and supply of quality inputs, including registration of hatcheries and introducing certification of inputs. • An efficient monitoring system has to be developed within DOF with proper manpower and logistics to monitor the resources status, production level and performance of the development and management activities of the sector for policy planning and management for different production systems: (i) Inland capture fisheries, (ii) Marine Fisheries, and (iii) Aquaculture. • A legal and regulatory framework along with institutional capacity should be established to ensure quality and food safety of fish/shrimp and products as per foreign buyers' requirement.
Fresh water Aquaculture and Extension Services: Sustainable aquaculture production, poverty alleviation, nutrition and export earning	• Development of appropriate culture technology and system for better and sustainable production based on different types of water bodies, soil and water quality. • Develop improved, eco-friendly and socially acceptable aquaculture technology for increased production.	• Ban on use of health hazardous chemicals/drugs in aquaculture system. • Diversify culture species but entry of any exotic species to be restricted if cause any harm on local species and environment even if found highly productive.	• Ensuring access of landless/poor men and women to public water bodies such as ponds, canals, burrow pits etc. for aquaculture with technical and financial supports.	

Table 6.7: Sustainable Development Strategies for Fisheries Sub-sector (Continued …)

Agriculture and Rural Development	Strategy for Enhance Growth	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
	• Ensure production and supply of quality inputs (fish fry/fingerlings, feed, fertilizers, medicine etc) through private sector involvement and public sector should continue to provide the services where private sector has not developed.			• Enact appropriate marine fisheries laws and regulations. • Exclusive economic zone of Bangladesh in the Bay of Bengal should be determined properly as per international ocean policy with dialogue with neighboring countries - India and Myanmar. • Strengthen the knowledge and understanding of the resources through research based on the needs of the sector determined through assessments of the needs of the key stakeholder's beneficiaries. • Establish linkage and coordination between Research and Extension for proper research need assessment and dissemination of research findings to the field/ target groups. • Ensure strong linkage with international research institute to stimulate research and feed required knowledge.
Coastal Aquaculture (Shrimp Farming and Industry), sustainable economic growth through export of shrimp produced by eco-friendly and socially viable farming system.	• Develop eco-friendly and socially acceptable shrimp culture technology for maximum economic production on sustainable basis. • Ensure production and supply of sufficient good quality and disease free shrimp seed through proper management of hatchery and brood management to meet the demand. • Protect shrimp farming system from the natural disasters	• Development of shrimp farming zoning based on suitable agro-ecological condition for shrimp farming. • Development and implementation of management plan to regulate collection of wild fry to conserve the resource in natural water balancing needs for livelihoods of the poor fry collectors.	• Ensure benefit of shrimp firming to local community particularly to support livelihood. • Develop local markets of the valued aquaculture products should also be explored for sustainability of shrimp sub-sector particularly for small producers.	

Table 6.7: Sustainable Development Strategies for Fisheries Sub-sector (Continued …)

Agriculture and Rural Development	Strategy for Enhance Growth	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Marine Fisheries: Sustainable production and improved livelihoods of the poor through scientific management, protection and conservation of the marine fisheries resource.	• Assess the marine fisheries resource/stock by types such as demarsal, pelagic, meso pelagic and other aquatic resources including sea weeds etc. at different depth levels/ zones (inshore, offshore and deep sea) and allocate fishing area by type of fishing gear for judicial exploitation at maximum sustainable level through regulating fishing effort to avoid over exploitation. • Introduce insurance system for life and property of the fishers. • Continuous monitoring of resources through commercial catch monitoring and experimental fishing to update the stock position for judicial exploitation of the resource should be ensured.	• Promote marine and estuarine fish resource protection and management through awareness raising, training for capacity building. • Fishing effort at artisanal level should be rightly registered and entry should be restricted within the sustainable level of stock.	• Empowerment and involvement of coastal community in coastal and marine aquatic resource management. • Allocation of fishing rights and its management to communities and relevant fishing group by providing regulatory framework of management. • Ensure easy term credit facilities for the poor fishers to avoid exploitation by the money lenders/mohajons.	• Strengthen the knowledge and capacity of the Department of Fisheries, its partners and its primary stakeholders at all levels to have requisite knowledge, skills and techniques to enable them to make productive use of their potentials and to respond to the needs for resource management and production for sustainable development. • Academic / university education should be practical oriented to cater the needs for development and management of different fields of fisheries addressing the present situation. • Develop professional efficiency/ capability of the DOF/BFRI staff through training and higher education.

6.5 Livestock Sub-Sector

The livestock sub-sector including poultry has emerged as a promising and dynamic sector with high potentials for poverty reduction and nutrition supply. The sub-sector has recently grown significantly from 2.8% in 2000-01 to 7.23% in 2005-06. The sub-sector contributes 2.95% to GDP and provides about 40% of animal protein in the diet of the people of Bangladesh.

Presently the livestock population of cattle and poultry are 46/50 million and 233.0 million respectively. Production of eggs (hen and duck) is 6070.00 million. Milk and meat output are 2.24 million metric tons and 1.16 million metric tons respectively

6.5.1 Present Status, Targets and Strategies

Over the last few years poultry and dairy have emerged as an important commercial enterprise in the private sector. But recently the poultry industry has had a great setback due to out break of bird flue. This has become as a great threat to the growing poultry industry of the country

Millions of small poor households are engaged in rearing animals and poultry birds on a small scale in their home yards. The husbandry practice is simple and environment friendly and does not compete with crop farming or other home based economic pursuits. Besides, many poor are employed in various backward and forward linkage activities related to commercial poultry farming. Some private sector firms have come up for contract growing of poultry and milk products supporting small farms which improved poultry and diary breeds, quality input supplies, demand-led extension services and assured marketing facilities for poultry and milk products.

Dairy farming has a huge potential for import substitution if it can be produced, processed and distributed hygienically. But low yield per cow, high unit cost of production and low farm gate price of milk remain major constraints. Import of powdered milk, which is cheaper than locally produced raw and pasteurized milk is also great impediment in dairy farm development. All these put the commercial dairy farmers, small or large, in disadvantageous position. Public intervention is needed to get out of this situation.

The private sector is the main actor in this sub-sector, while the MOFL through Department of Livestock Services is responsible for development and management of the sector. The DLS is supportive in the development of the sub-sector. The private sector need to be encouraged and facilitated.

The sub-sector needs proper policy planning and strategies to harness the full potential of the sector through creating an enabling environment, opening up opportunities, and reducing risk and vulnerability. However, Government has formulated livestock policy which emphasizes on (i) enhancement of the knowledge base of small holders on animal husbandry, nutrition and disease control through a community participation approach, (ii) provision of technological support with respect to disease control, genetic stock development, and supply of quality feeds, vaccines and medicines, (iii) training and education on livestock and poultry development, (iv) provision of adequate technical, financial, infrastructure and marketing support for large, commercial farms as well as small-scale home-based farms, (v) strengthening and broadening of livestock extension and veterinary services, integrating community-based participation at the local level, (vi) promotion of a private sector-led supply chain i.e. contract growing of poultry and dairy products involving small rural producers, (vii) introduction of livestock insurance programme, and (viii) enhancing budgetary support for livestock research and extension with necessary institutional strengthening of DLS.

By the target year 2020, the livestock sub-sector is expected to grow at a high rate of 8% and to raise its contribution at least 3% to the GDP. To achieve the target the following development strategies are proposed to be implemented (Table 6.8).

Table 6.8: Sustainable Development Strategies for Livestock Sub-Sector.

Agriculture and Rural Development	**Strategy for Increasing Supply of Meat and Protein**	**Strategy for Environmental Sustainability**	**Strategy for Social Development and Sustainability**	**Policy Support and Institutional Capacity Building**
Sustainable production of eggs, meat and milk to meet up requirement	• Promote small, medium and large scale dairy and poultry farming on commercial basis through providing technical, financial, infrastructure and marketing support. • Strengthen livestock R&D for development of quality breeds including genetic stock development • Establishment of forage bank in drought hit area to mitigate livestock feed shortage. • Protection of livestock and poultry from disasters particularly cyclone and flood • Development of stress tolerant livestock and poultry strains to cope with climate change.	• Build livestock shelters and fodder storage for disaster period since climatic hazards will be more frequent and intensive in future due to climate change • Building special sheds for poultry and livestock to protect them from heat stress in drought vulnerable areas • Provision of adequate livestock health care services for disease control including supply of adequate medicine and vaccine.	• Development and protection of family/private farm poultry production, goat raising and beef fattening. • Dissemination of scientific knowledge about animal husbandry among community	• Institutional capacity building of the Department of Livestock Services (DLS) with adequate budgetary provision and logistics.

6.6 Forestry Sub-Sector

Forestry is an important resource having both economic and environmental value. It is one of the most important components of environment balancing the ecosystem. However, its economic value is far exceeded by its environmental importance/ significance.

The forestry sub-sector presently accounts for 2.93% of the GDP with annual growth rate about 5%. Official record of forest area is 2.5 million hectare or 17% of the total land area of the country, but practically it is for less than this figure. The forest area has declined due to clearing forest land for cultivation, shrimp farming, industry, and dwellings in absence of proper policy strategy management. However, the social/homestead and community forestry has significantly grown due to vigorous public sector campaign for plantation.

6.6.1 Policy support

The Bangladesh Government formulated the National Forest Policy for the first time in 8 July 1979. For amendments of the policy, the Government of Bangladesh formulated Forestry Sector Master Plan (FSMP) in 1993. The objective of the FSMP is to optimizing the contribution of forest resources for environmental stability and socio-economic development through people-oriented forestry programs.

6.6.2. Major Programs of FSMP

- People-oriented Programs
- Production-Directed Programs
- Institutional Strengthening

After amendment of the policy, the National Forest Policy, 1994 has been formulated. The objectives of the National Forest Policy, 1994 are:

- To meet the basic needs of the present and future generations and also to ensure greater contribution of the forestry sector in the economic development, about 20% of the total area of the country will be afforested by taking up various afforestation programs.
- By creating employment opportunities, strengthening the rural and national economy, the scope for poverty alleviation and trees and forest based rural development sector will be extended and consolidated
- Biodiversity of the existing degraded forests will be enriched by conserving the remaining natural habitual of birds and animals
- Agricultural sector will be strengthened by extending assistance to the sectors related with forest development, especially by conserving the land and the water resources
- National responsibilities and commitments will be fulfilled by implementing various international efforts and government ratified agreement relating to global warming, desertification and control of trade and commerce of wild birds and animals
- Through the participation of the local people, illegal occupation of the forest lands, illegal tree felling and hunting of the wild animals will be prevented
- Effective use of utilization of the forest goods at various stages of processing will be encouraged
- Implementation of the afforestation program- on both public and private lands will be provided with encouragement and assistance

6.6.3 Ordinance and Acts

- Private Forest Ordinance, 1959
- The Forest Act 1927 (as amended up to 2000)
- The Atia Forest (Protection) Ordinance, 1982
- Bangladesh Wildlife (Preservation) Order, 1973 (as amended up to 1974)
- East Bengal Protection and Conservation of Fish Act, 1950
- Crab Export Rule, 1998
- Bamboo Export Policy, 1999
- Brick Burning (Control) (Amendment) Act, 2001
- Institutional support- Department of Forest

6.6.4. Institutional Support

The key responsibility of the department is to facilitate the goals and objectives of the National Forest policy 1994. As an organization, Forest Department has multi-dimensional functions of forest resource conservation and management, protection and management of biodiversity and watersheds along with economic and ecological development of the country.

The Bangladesh Forest Research Institute was set up as a Forest Products Research Laboratory (FRL) in 1955 by the Government of the then Pakistan. After the independence of Bangladesh the FRL was reorganized as BFRI. In 1985, the BFRI was separated from the Forest Department, and its administrative control went under the Ministry of Agriculture (MOA) and then in 1988 under the Ministry of Environment and Forest (MOEF).

By policy, BFRI bears the obligation to provide research supports to the FD, BFIDC, end-users and others in performing the forestry activities. BFRI aims at maintaining sustainable productivity of forest land and forest industries without resource depletion. The broad goal is to reduce the demand-supply gap of forest resources

Research in the following broad programmed is conducted to achieve national goals in forest productivity, employment generation, environmental conservation and woman's participation in line with the Forestry Sector Master Plan of the country

- Optimise productivity in hill, plain, village and coastal forests through the application of technological input to alleviate the poverty
- Provide research backup to forestry and agro-forestry in waste and marginal land for optimum and sustainable utilization
- Rational utilization of forest produces through the application of technological input
- Help in conservation of biodiversity and environmental balance in national and rural forests
- Increase liaison with regional and global organizations and networks

Inventories of all major forest formations in the country except the forests in Chittagong Hill Tracts were carried out. This has provided the necessary database for using quantitative information for writing more comprehensive management plans for different forests. Small units of uniform crop have been identified and information on these units were recorded with the help of computer based Resources Information Management System (RIMS) unit in FD.

The inventory and associated activities have made long desired information on the status, growth and yield of forests in the country available. It has been possible to develop volume and yield functions for all major plantation species and volume functions for major species in natural forests. This has made possible to regulate yield for long period of time. A new working plan format has been devised to make it possible for the use of the available information in future management plans.

An annual plan of operation is included as part of the management plan. This is basically a detailed plan of operation within the forest division and is prepared by the Divisional Forest Officer.

In recent years there has been a substantial shift in emphasis in Forestry and Forest Management from maximizing yield towards maximizing sustainability through increased participation of local population, conserving biodiversity and maintaining forestry services

Some new forest management systems are also added to address new concept in forest management such as agroforestry, homestead plantation, strip plantation, participatory forestry on encroached forest, mangrove afforestation on newly accreted land in the coastal area, conservation area management to preserve wildlife habitat and biodiversity.

6.6.5 Target and Strategies

The development programme of the forestry sub-sector aims at large scale afforestation, preservation of forests, increase in timber supplies, and preservation of biodiversity and wild life. The main objectives of the National Forestry Policy are to promote production oriented and participatory forestry

development, so that at least 25% of the country's land is brought under forest coverage through proper conservation, management and importantly the afforestation programme through the coordinated efforts of the government, NGOs, the private sector and the local people and the GDP contribution is raised to at least 2.0% with annual growth rate of 5%. The major areas of intervention include expansion of forest in depleted hills and Khas land, tree plantation in rural areas on private land and along the roadsides, railway tracks, embankment slopes and courtyards of rural organizations through community participation of the poor.

Women will be encouraged to get involved in homestead and farm forestry. Agro-forestry should be promoted so as to increase land productivity from simultaneous cultivation of crops, trees, grass and herbs. Social forestry programme through the tripartite arrangements amongst the government agencies, NGOs and poor households which has shown bright prospects in terms of employment and income generation for the poor need to be further strengthen and expanded. The state owned forest based industries will be made more competitive and profit-oriented. The institutional capacity of this sub-sector need to be developed through strengthening of forestry education, training and research as well as improvement of the operational efficiency of the Forest Department.

6.6.6 Strategies of Forestry Sub-sector

The strategies and policy issues for the forestry sub-sector are discussed in table 6.9.

Table 6.9: Sustainable Development Strategies for Forestry Sub-sectors.

Sector	Strategies for ensuring access to natural resources	Strategy for environmental sustainability	Strategy for social development and sustainability	Policy Support and Institutional Capacity Building
Forestry	• Expansion of forest coverage (20% of land area under forest by 2015 as per national forest policy 1994) • Development of forest extraction and transportation technology • Promote forest ecosystem management and enhance forest biodiversity and wildlife conservation • Enhancement of homestead and social institutions based forest in both urban and rural areas • Develop forest based labor intensive industries • Increase forest productivity through different measures and actions	• Ecosystem and site-specific afforestation programme in both urban and rural areas • Ecosystem wise zoning of forest land • Promote ecotourism considering carrying capacity of those forest area and natural habitats • Enhance forest biodiversity and wildlife conservation through expanding protected areas, protecting inaccessible land (slopes, fragile water sheds, swamp etc.), identifying and developing more sanctuary, preparing recovery plan of endangered wildlife species etc. • Sustainable Management of Non-wood Forest Products (NWFPs) • Develop mechanism for productive and distribution of quality planting materials	• Ensure people's participation and ownership (including tribal, indigenous, ethnic groups and the poor) in social afforestation programme • Promote community base massive awareness programme for plantation of timber, fruit trees and medicinal plants by local community • Promote agro-forestry and social forestry practices	• Encourage and promote private forestry organisations and tree farm • Capacity building programme forest departments as well as community people • Strengthen capacity of Bangladesh Forest Research Institute (BFRI) to support forestry sector activities • Update rules and procedures regarding transportation of forest produces in the country • Develop mechanism for efficient use of forest resources • "No road without trees" policy should be adopted in urban areas • Strengthening educational, training and research for boosting up forestry resources and green coverage • Strictly enforcement of forest laws and if necessary new laws to be promulgated

Article 28 of our constitution has granted protection to all citizens in the following words, "The state shall not discriminate against any citizen on ground only of religion, race, caste, sex or place of birth" (GoB, 1972). Constitutionally every individual is protected by law but the reality is different. The society being rigidly stratified and economic resources unevenly distributed the social justice like right to food, shelter, clothing, education, health, and physical protection are not ensured to all. This report has separately discussed about each of the above aspects in this section of the report. NSDS is concerned with citizen rights because development activities should not only ensure better life for all but should also ensure the protection of interest of all irrespective of their socio-economic statuses. Monsoor (1999) claims this provision to exist in the constitution for women only in public sphere but not in private sphere. This means that there are many areas in which women are discriminated and for which there is no protection for them. NSDS' goal is to set strategies to ensure the protection of public and private rights of all that may be affected due to activities of sustainable development. The targets of Social Security and Protection are as follows:

- Avail quality health and sanitation services for all
- Minimum shelter for all, access to services/utilities
- Quality education
- Social safety net
- Gender equity/ women empowerment
- Special services for children, aged, and disabled
- Provide employment opportunities
- Access to information and communication facilities
- Arrest marginalization
- Keep cultural diversity

This section of the report discusses in brief the present status of each of the above mentioned areas and what should be done to achieve sustainable development and ensure rights of citizen. In a broader sense social security and protection is aiming to ensure fundamental rights and equal access to resources and services for promotion of social security, protection and social justice.

7.1 Avail quality health and sanitation services for all

The primary objective of avail quality of health and sanitation services for all is to ensure that existing achievement will sustain in future and provision will be made to cover the growing needs of the society.

7.1.1 Present Status

Bangladesh with her 153.3 million people has only 1,683 hospitals as of 2006 (BBS 2007). Of these only 678 is government ones, which have more access to poor and disadvantaged people. Persons per hospital bed are 2,732 inclusive of non-government ones, persons per physician are 3,128, and persons per nurse are nearly 7,000. Per capita government expenditure on health and family planning is only Tk. 2,960 (about US$ 40). However, life expectancy has increased to 64.9 years possibly for controlling of epidemics and immunization of children. The above mentioned health scenarios amply demonstrate that health service is inadequate and a significant proportion of population are bound to deprive of their rights of health simply due to non-availability of services. Family planning program is an important component of health. Ministry has achieved significant success at the end of the last century regarding decline of fertility rate, increase of contraceptive prevalence rate (56%, BBS 2007) and fall of infant mortality rate (53 per 1000, WB, 2005). Despite these few successes Bangladesh is far short of catching up Asian countries like South Korea, Sri Lanka and Thailand (WB, 2005) with regard to health services.

For sustainable development it should have full coverage of health services and increase the contraceptive prevalence rate in order to stabilize our population at zero growth level as fast as possible to have a healthy labour force. The task is a difficult one particularly given our national resources. The primary goal of our health sector should be to reduce incidences of diseases that seasonally occur and persist among the poor for lake of information and undesirable environment in which they live. For this purpose public health sector must be strengthened to reduce the incidences of diseases. Health education

is an important component of public health sector, which should be vigorously, launched both at rural and urban areas to make people aware of the diseases and to apply appropriate measures before the occurrence of incidences. Health education program can be greatly improved though coordination at all levels and sectors of the country. Government and NGOs can form coordination committees and share each other work and avoid duplication of the same work. Also field workers of agriculture, social welfare, family planning etc. can be make made multipurpose workers through training. Each worker along with her/his departmental work may render health service to the people.

Investment in public health sector is most crucial for reducing the incidence of diseases as such measures minimizes the breeding of diseases. For example, investment for safe drinking water will reduce water born diseases requiring minimum clinical services. It is necessary to identify the areas for investment in public health and calculate the cost benefits for setting priorities.

Although priority should be given to public health sector, the importance of clinical services must not be undermined because the poor cannot afford service at private clinics. There are concerns about the mushroom growth of private clinics and phenomenal rise of prices of those services. Since all these private clinics and hospitals use the services of limited numbers of available physicians, government hospitals and clinic are continuously suffering from shortage of specialists and general physicians. And those who are still with the government service give more time to serve the relatively wealthy clients of private hospitals and clinics. Therefore, a crisis situation exists in health sector particularly to cover the poor patients. There is no serious thought given in these sector, there is hardly any short term goal for it. Once in Chinese style village doctors were produced with a short training for treatment of common diseases but that program is stopped now. There should be an evaluation about the quality of service these village doctor's are providing to the people. The long term goal to overcome these problem is to produce more doctors by establishing opportunities for higher training so that specialized physicians can be sent to outside big cities and towns and more general physician can be made available to people. Since making clinical service available to people is time consuming public health sector should be strengthened to keep the incidences of disease as low as possible.

There has been a strong campaign as well as activities to improve the sanitation system of the country. Success record is very encouraging, nearly 81% of the families in the country have modern sanitary system (internet, UNSTAT, 2006). The sanitation program is implemented by the Government along with UNICEF. NGOs are supplying material for sanitary latrine at a very cheap rate (US$7.0) in instalments. Consider the progress and level of intervention from different stakeholders, it may be concluded that in a very short time all families of the country will be using sanitary latrine. The only thing that has to be done is to continue the present activities in this sector.

Bangladesh was about to provide safe drinking water to all households but arsenic in water has become a problem. However, recent invention of cheap instrument by a Bangladeshi scientist in the USA has made it easy to make arsenic free water from the tube-well. It is expected that Government as well as NGOs will popularize this instrument and make available to people. At present nearly 25% of the total population does not have access to safe drinking water. The most water now available for drinking is lifted by tube-well. It is reported that groundwater is depleting at a faster rate and arsenic in water is the consequence of it. Once tube-well was few and people used to use surface water both for drinking and agricultural purpose. Availability of deep tube-well and electricity has changed the previous practices. Today it has become necessary to think about the old aged practices. It probably true demand of growing need of water supply can not be met by harvesting rain water in rainy season but it has potential to minimize lifting groundwater by harvesting it for domestic and agricultural use. The campaign may be made stronger to motivate people to use surface water as much as possible which is also environment friendly.

7.1.2 Strategies to Provide Quality Health and Sanitation Services

The key strategies suggested to meet the growing demand of the population are given

bellow. Details strategies are given in the table 7.1

- Ensure strong health education program to build capacity;
- Increase equal access to existing health services to all;
- Increase contraceptive prevalence rate to arrest population growth and demand minimization;
- Increase sanitation system and provide coverage to a wider number of people; and
- Make provisions so that everyone can have access to safe drinking water.

7.2 Minimum Shelters for all: Access to Services and Utilities

Ensure minimum shelters for all including access to services and utilities is the second block under social security and protection.

7.2.1 Present Status and Need

There is very little statistics regarding housing condition of people in the country particularly the characteristics of the houses in terms of construction and materials used. A great number of poor especially in the urban areas are practically homeless or slum dwellers. Some researchers argue that about one-thirds of the Dhaka population live in slums or under the open sky (Rahman, 2000).

It is well recognized that Bangladesh is also vulnerable to natural disasters such as cyclone, flood, river erosion and drought. These natural disasters render thousands of people homeless every year. The cyclone Sidr alone destroyed innumerable homes displacing thousand of families. Research has shows that the majority of rural –urban migration is associated with natural disasters such as cyclones, floods, drought, river bank erosion which directly affects the livelihoods of the people. Since this has become a common occurrence, a permanent solution is required immediately. Different researches have shown that the migrants in cities are mostly victims of cyclone, river erosion, flood, and poverty. Hence, the shelter for the poor is a serious problem not only in the cities but also in rural areas particularly who looses their homes due to cyclone and other natural disaster. Since occurrence of natural disasters has become almost a routine matter in Bangladesh, a permanent solution of it is necessary.

In principal, the first step in this regard should be to protect and shelter people during the disaster particularly at the time of cyclone, flood, tidal bore, and tornado. There is still shortage of cyclone and disaster shelters in coastal areas. A large numbers of shelters must be built in the coastal belt of the country. Government has undertaken long term projects for building the shelters with the help of foreign donors and local contributors. The most serious concern for the victims is the waiting time between the incidence and the arrival of the help to rebuild their homes, although many promise soon after the disaster. A substantial amount must be allocated in annual national budget to render services to the victims as natural disasters are visiting almost every year which has relationship with climate change. In addition to public fund, at local level capacity building program should be taken to make people able to help themselves in building their own houses using their own and local resources. The program should target not only the potential victims but also the community as a unit of action, which means in case of emergency community members will act as a group.

Disaster victims are not only the shelter-less people rather shelter-less people are gradually increasing due to high migration rate to cities and towns and rural poverty. For sustainable development shelter for these people should also be ensured. Before making any plan a clear statistics about the actual numbers of shelter-less people in the rural and urban areas and must have projection about the future rate of shelter-less people. These people are likely to be poor and unskilled, who will migrate wherever they will get an employment. Therefore, one of the industrial policies may be to decentralize the industries to get in such locations where people can come from home to workplace. In fact, in some areas individual industrialists have located there plants in rural areas. The advantages on the part of the industrialists and workers are that no extra housing is needed, no new plant for water supply is required, no disruption of the existing natural setting. However, all industries can not be set in rural setting. Hence, there will always be a need for shelter

for the poor workers. New or old shelters also require utilities like water, fuel and electricity. All these are also in short supply in the country.

Both the rural and urban areas are dependent on ground water to meet the daily needs. In urban areas ground water is used for both domestic and industrial purposes while in the rural areas, irrigation is carried out using mostly groundwater. Lifting of ground water without giving chance to replenish it is threatening our future source of drinking and irrigation water. Drying of surface water due to long drought is creating crisis for domestic use for us and domestic animals. The immediate solution to this problem is to reduce our dependency upon the groundwater and increase our dependency upon surface water. Also for all big cities water treatment plans should be installed to treat the water for recycling. In the absence of it, water should be drawn from river and other surface water bodies as a short term measure. Also along with these a health education program should be vigorously pursued for making people aware of the crisis and motivate them for rational use of water. Both in rural and urban areas people should be informed how to harvest rainwater for drinking purpose. This will seasonally reduce the demand on supply water in towns and ground water in rural areas.

With the disappearance of forests and homestead gardens in our rural areas fuel wood is gradually becoming a serious crisis both in villages and towns where natural gas supply is yet to reach. Even today the vast majority of the families in the country depend upon the wood for cooking purpose. It is not possible to supply gas to all parts of the country given our sources and technical know-how. Also we still don't know our total reserve. Under this situation, we have to be very pragmatic in using available natural resources. Some of organizations namely BCSIR have already introduced fuel efficient biogas stove for cooking. The project is yet to get momentum. These stoves are run by different agriculture waste products and wood dust. Government as well as NGOs should jointly organize programs to popularize this technique of cooking for saving our trees and plants. Social forestry program executioners may also encourage people to opt for new method of cooking because that will reduce the dependence of people on the fuel wood.

Production of electricity, know to all, is far short of demand. At this point it is not possible to ensure electricity for all in the country. In fact, it is going to take long time to cover the whole country although we have already started the program in a modest way. However, installed capacity is 5245MW (by 2006) but that produce hardly around 3000 MW, (BBS, 2007). Since production of electricity is not possible overnight alternative source of energy like solar is being used by limited numbers of relatively batter-off families in outreach areas. Grameen Shakti an NGO is now working in the area. Some other agencies are also possibly planning to be in it. Right now the approach should be to improve the efficiency of the organization (PDB) to maximize the production and reduce the system loss. However, in future any expansion of the distribution of electricity, the poor should get the priority.

7.2.2 Strategies for Shelters and Services

The key strategies suggested to meet the shelters in rural and urban areas to meet the demand of the population to deal with natural disasters are given bellow. Details strategies are given in the table 7.1

- Building multi-purpose shelters for natural disaster victims.
- Emergency supply of house building materials for the disaster victims.
- Low cost housing materials for the rural and urban poor.
- Shift industries to rural setting to reduce the demand of new houses and services.
- Reduce dependency on ground water by harvesting rainwater by excavating ponds, canals, creeks, streams, and rivers.
- Recycle water through treatment.
- Popularize biogas stove for reducing dependency upon fuel wood.
- Increasing efficiency of PDB to met the growing demand of electricity

7.3 Quality Education for all

Key objective of the strategy is ensuring quality education for all for present and future generation.

7.3.1 Present Status and Needs

Universal primary level enrolment is one of the main educational goals of MDG. The gross primary enrolment rate had increased from 61% in 1980 to 96% by 2000 (WB 2005). The UNICEF's estimate, however, is much less (79.8% by 2000). Whatever is the estimate there is no doubt that the enrolment has definitely increased in Bangladesh. The dropout rate is also significant. Out of all enrolled students 66.3% complete the primary level education (5th grade). Enrolment and staying in school are associated with living standard of students, parental schooling, occupation of parents, access to infrastructure, and food for education program.

Gender disparity both in primary and secondary level has decreased over the last decade (WB 2005). However, enrolment and continuing in school don't ensure the quality of education. Education watch (2002) claims that one-third of the children after completing five years of schooling are reported to be without functional skills of literacy and numeric ability. Quality of education in the Madraha system is even worse than the general school system (BBS, 2007). The government has taken two major steps to improve the quality of education: first, to improve the classroom environment, and second, to strengthen education management. Plans have also been drawn to improve the quality of teachers through training and better recruitment. The government plan for improving the quality of education focus more at school levels while teachers for these schools come from the college and universities. If colleges and universities don't produce quality graduates, schools can't have good teachers. A master plan is prepared by the past government for improving the quality of higher education but that has yet to be implemented. Bangladesh not only needs high quality education but also diversification of education particularly expansion of technical education. 56 private universities are imparting education only on few subjects that have relatively better job market. Education must have twin goals; one is to prepare a person for enabling her/him to be effective in real life, another one to make the person a good citizen with necessary attributes. In term of strategy it is necessary to find how far our educational institutions of private and public sectors are meeting these goals. In the age of globalization, evaluate the compatibility of our graduates with the advanced societies is absolute needs, otherwise development will not be able to keep pace with them.

7.3.2 Strategies for Quality Education

The key strategies suggested to provide quality education are given bellow. Details strategies are given in the table 7.1

- Ensuring universal education for all at least at primary and secondary levels
- Reducing gender parity at all educational levels
- Improving the quality of education in all types of education systems (Madrasha, English medium, and Bangla medium)
- Increasing the numbers of technical colleges and universities

7.4 Social Safety Net

Creating social safety net for the people of Bangladesh

7.4.1 Status and Needs

In industrial countries like UK, USA, Canada there is a social security system which means in case of unemployment, illness and old age, government support is provided. A citizen does not have to depend on others particularly upon children or other blood relatives for their well-being at times of crisis. The supports are universal for all citizens in above mentioned countries. In Bangladesh, government, semi-government and some industries have system of pension, gratuity, and provident fund for their employees but nothing for the people in general. However, it has free medical services in government hospitals and maternal and child health clinics for all. The quality of service being very poor in these canters middle and upper class people have almost abandoned to go to them. Bangladesh does not pension and unemployment allowance for non-service holders. Only recently a microscopic few receive old age

pension, which again is very meager. The traditional safety net for the poor was the land lords who used to employ large number of workers, give lands for share cropping, and lend money during crisis. Their relationships with land lords were like patron-client, but that system is fast disappearing. Extended families were the safety net for their family members because all family members were living in the same house and eat from the same kitchen. All income from members was handled by the head of the family. Thus unemployment of a member was not a problem as his/her food, shelter, and clothing were ensured by the family. Her/his membership in the family was the insurance of life and living.

That safety net is disappearing because extended families are breaking down due to migration of families to new locations individually as well as nuclear family. In fact, the process of breaking extended families into nuclear ones is becoming very common both in urban and rural areas. Breaking of them means the end of traditional safety net of the poor, without having an alternative support for them. The safety net is totally absent for the disaster victims, disabled, sick, old people, and widow. It is not possible to create a social security system in a foreseeable future because of resource constraint. However, we first need to know the numbers of people need public support for their survival. A master plan must be prepared as a long term goal to bring all people under the social safety net. In master plan priorities should be given to old, widow (without children), disabled, etc. We are aware that such a plan is difficult to make and employment but we can't wait for an indefinite period.

7.4.2 Strategies for Social Safety Net

The key strategies suggested for social safety net are given bellow. Details strategies are given in the table 7.1

- Stocking of food grain for distributing at a fair price during the crisis period.
- Expand financial support to old, widow, disabled, and sick.
- Ensure free and efficient medical services for all at government hospitals.
- Introduce health insurance for all employees of government, semi-government organizations and private enterprises.
- Introduce compensation for health hazards during duties both in government and non-government organizations.
- Establish labour intensive industries to accommodate maximum numbers of workers.
- Introduce works programs during lean period of the year particularly in Monga prone areas.

7.5 Gender Equity and Women Empowerment

We want to ensure gender equity and empowerment of women

7.5.1 Present Status and Needs

Women in Bangladesh are apparently guaranteed sexual equality by constitution of Bangladesh and the general law, but patriarchal interpretation of the law continues the dominance of patriarchal attitudes (Monsoor, 1999). There is an internal contradiction within the constitution granting sexual equality and making special laws for women. However, whatever rights are granted in the constitution is not enjoyed by women of Bangladesh. Hence, there is urgent need of ensuring equity rather than equality. There is no need of discussing the present subordinate status of women in Bangladesh as the fact is well documented. The question now is how to achieve first the equity and then equality.

There have been various programs introduced both by the government and NGOs to empower women. One of the important efforts is to increase economic power of women, which means providing opportunity for earning cash money and having control over it. Micro credit programs of Grameen Bank and other NGOs have achieved remarkable success in that but coverage of this program is limited to only the poorest of the poor groups who are only a portion of the total women population. Women are also far behind men in education and higher level occupations. Government has introduced quota system in govt. jobs and education facilities to make up the gap. The encouraging factor is that female enrolment

in primary and secondary levels are rising appreciably in recent years. We believe the present laws and government policies are quite adequate for meeting the requirements of equity for women but lack implementation. According laws of the country there is minimum age for marriage of women, dowry is illegal, marrying second time without the consent of the first wife is illegal, and some share of husband's and parental properties are guaranteed by law, but hardly these are executed. Therefore, along with enactment of news laws for ensuring the equity, the implementation of earlier laws must be guaranteed.

For the purpose, the most important role can be played by the media. In fact, media has given invaluable services regarding acid throwing, dowry, child marriage, etc. Journalists should be made aware of available laws of the land and the laws that are needed to be enacted in future for ensuring equality. Law enforcing agencies should be oriented about the importance of proper execution of laws. Along with orientation program strong monitoring system should be developed to check the negligence of law enforcing agencies and proper implementation of the program. The most powerful force for achieving equity and equality is social movement against stereotyped image of women and religious misgivings. NGOs are working for it. Their hands must be made strong through local support. We have seen many child marriages are stopped by local initiative and government actions. To erase present image of women, gender equity and empowerment should be included in school and college syllabuses, since school and college enrolment are increasing significantly. The single most important element of women empowerment is their economic independence. We have earlier mentioned that NGOs and Grameen Bank are providing micro credit for the purpose. We should go beyond micro-credit particularly for lower middle and middle class women who virtually remain dependent upon husbands for lack of education and any job skill. These women for very cultural reason can't accept occupation like lower class women. We should come up with some program to utilized this labour force who has now significant leisure time due to availability of time saving modern domestic gadgets. Attention should also be given to continuation of female students in schools and colleges. Although enrolment of boys and girls at primary level is almost equal but the latter's dropout rate is high at higher levels. Efforts should be made to reduce the dropout rates of female students and direct them to go for vocational education so that their chances of pursuing occupation become easier.

7.5.2 Strategies

The key strategies suggested for ensuring gender equity and empowerments are given bellow. Details strategies are given in the table 7.1

- Raising awareness among women about their rights
- Women empowerment

7.6 Special Services for Children, Aged and Disabled

Ensuring child rights and special services for children, aged and disabled

7.6.1 Present Status and Needs

Bangladesh signed the UN convention on the rights of the child and subsequently formed an association namely Shishu Adhikar Forum (Blanchet, 1996). The term 'Child rights' is conveniently construed as children's needs by developing agencies while UN Convention refers it to the identity of child as an individual person gradually developing a sense of agency and autonomy. The signing of the convention has actually changed nothing. Different interventions, such as child nutrition, immunization, and education program are meant to meet children's needs, which development agencies consider as means of upholding child rights. The rights of freedoms of expression, free access to information, freedoms of thought and association are not considered as child rights. As a first step to ensure child rights, this misconception has to be wiped out from the minds of government officials, NGO workers and intellectuals. Although misconception still prevails, some awareness about children's well-being has been shown by all concerns. As a result, Shishu (children) Academy has been established, massive schooling program has been introduced, NGOs have established specialized schools

for slum and working children, and a separate home for prostitutes' children is established. In recent years concern for disabled children has also come into forefront. NGOs rather than the government seem to show greater interest about their well-being. All these activities are insignificant compared to the needs. However, all activities related to children are still centred on meeting the needs of children rather than asserting their rights. Few programs that we know and see are primarily based in towns and cities while the vast majority of rural children are deprived of basic needs like proper nutrition, quality education, parental emotional care (which is very much needed for young children), and adequate medical facilities. Few years' back one UNICEF survey claimed that a significant proportion of children of Bangladesh are growing as retarded adult.

Our life expectancy has gone as high as 65.0 years (BBS, 2007), which means we are going to have a large number of old aged people. Previously most families being rural based extended ones many people in a family used to look after the older people. Also, in the past, the life expectancy being short, only few people would live up to the old age. The scenario is quite different today. With the control of epidemics, the mortality has fallen significantly and consequently older people have increased. Older people have many problems. In the absence of social security system the overwhelming majority of them are dependent upon off springs or near kin, many of whom may not be well off. They are also susceptible to chronic illness and diseases. In other words, they need more medical care then younger members of the family. We have not yet developed specialized medical care for older people, for which significant numbers of geriatricians will be needed in the near future. Therefore, considerable budget allocation should be recommended for taking care of older people. In the absence such resources our growing numbers of older people will suffer.

7.6.2 Strategies

The key strategies suggested to provide special services to children, aged and people need special attention are given bellow. Details strategies are given in the table 7.1

- Enacting laws for child rights such as freedom of expression, freedom of thought, free excess of information and association.
- Expand the services like nutrition, education, medical care, and emotional support
- Strengthening existing government and NGOs programs that work for children.
- Expanding allowance, medical facilities and shelter for aged and disabled.

7.7 Provide Employment Opportunity

Increasing employment opportunity

7.7.1 Present Status and Needs

Estimated civilian labour force of both sexes aged 15 years and above in Bangladesh is about 51.7 million (BBS, 2007). There are very confusing statistics about the total percentage of actively employed people of the country. Hence, we will not wrestle with these figures rather we accept the fact that we have a large number of unemployed and under employed people in the country. In recent years, non-vocational unemployed educated youths have increased significantly for our wrong education policy. However, about 60% of our labour force is engaged in agriculture, forestry, and fishery sector followed by trade, hotel and restaurant (12%), industry (8%), and services and others (5%). The most important point to note here is that the industrial labour force is still very minimal, which indicates that our meager investment in the industrial sector. We must note that there is no country in the world, which has achieved sustainable development engaging majority of the labour force in agriculture.

For sustainable development we will have to reduce the numbers of labour force in agriculture sector and increase its share in manufacturing. This is also necessary for reducing our dependency upon foreign manufactured goods. This is not easy because this will require capital and technical know how. Again technology that is to be used for it has to be environment friendly otherwise its negative impact will be very costly for the nation.

Despite all these limitations we have to

explore the possibilities of employment for our youths. One such area is export of workers to foreign countries. Nearly 4-5 million Bangladeshi workers are working now in different countries of the world. The remittances of these workers are the major source of our national foreign currency but that labours market shrinking fast due to recent restrictions impost by workers importing countries. However, Government is still very active in sending more workers to foreign countries. But this is not a permanent solution of employment of our youths. We have to arrange employment for them at home.

There is no alternative to industrialization but the question is what kind of industrialization should get the priority. Our competition ability is still at a minimum level because of absence of raw materials, capital, and lack of technical know-how. Our industrialization should focus on agro industry for which we have a large labour force and also a ready local market. Similar areas should also be identified by the economists and environmentalists and put forward their recommendations to the government. However, attention should be paid to labour intensive rather than capital intensive industries.

7.7.2 Strategies

The key strategies suggested to create employment opportunities are given bellow. Details strategies are given in the table 7.1

- Vocational training of people for local and international employment.
- Diversifying agriculture production system and more scientific agricultural practices for increasing production, which in turn will generate more employment.
- Establish agro-based industries using local products.
- Investment in labour-intensive industries in order to reduce dependency of large numbers of workers on agriculture.

7.8 Access to information and communication facilities

People should have access to information and communication facilities.

7.8.1 Present Status and Needs

One of the biggest barriers of communication is literacy. Print materials are no good to a large numbers of adults, whose literacy rate is very low. However, recent revaluation in telecommunication sector has increased the access of people to information. Access of people to different services centres like hospital, fire service station, police beat, etc. have increased due to infrastructure development in rural areas. However, there is no reason for complacent with these limited achievements as we still far behind the mid-level developed countries like South Korea, Thailand, and Malaysia. There should be information centre both in urban rural areas so that people can have necessary information about, health services, agriculture services. Police services, legal services, and disaster and cyclones.

7.8.2 Strategies

The key strategies suggested to ensure access to information are given bellow. Details strategies are given in the table 7.1

- Each government offices at Upazila, district, and metropolis should have an information booth about the services they provide to people.
- Local self government offices and NGOs should have sources of information.
- People should have access to communication facilities to get the services.

7.9 Marginalization

We want to stop marginalization of people by intervening in the process of marginalization.

7.9.1 Present Status and Needs

Nearly 40% poor of Bangladesh live below poverty line. Although 1% of them are crossing the line, the absolute numbers is still very big. The process of marginalization is still continuing in rural area as more and more small farmers are becoming landless. Many of them sell their lands by wealthy land grabbers. In the urban areas marginal people are those who live in slums. Their numbers are also increasing due to high rate of migration of rural poor. Also, some lower middle class are sliding down to marginalized category for lack of employment.

7.9.2 Strategies

The key strategies suggested to arrest marginalization of people are given bellow. Details strategies are given in the table 7.1

- Increase financial support and emergency relief
- Create job opportunity round the area.
- Protective laws for sharecroppers and lessee.

7.10 Cultural Diversity

Key objective is to ensure harmony among all ethnic and religious groups

7.10.1 Present Status and Needs

People of different faiths, such as Islam, Hinduism, Christianity, Buddhism, and tribal religions live in the country. Beside Bengalees there are many hill and plainland tribes who are ethnically different from each other. They have their own cultural practices in terms of food, housing, clothing, rituals, marriage patterns, etc. Although at present all ethnic groups are living peacefully there were some commotions between tribal and non-tribal people in the past.

7.10.2 Strategies to Ensure Cultural Diversity

The key strategies suggested to ensure cultural diversity are given bellow. Details strategies are given in the table 7.1

- People of all faiths should be equal in the eyes of law.
- Ethnic minorities should not be discriminated in any sphere of society.
- Traditional tribal rules, rituals, practices must be respected and allowed to uphold by respective tribe.

7.11 Existing Tools

There are many policies formulated in the country to deal with above mentioned targets, such as health and sanitation policies, education policy, laws regarding dowry and gender equity, etc. But very few policies are properly implemented due to negligence of policy executioners, political influence, inefficient officials, and corruption. The last two governments introduced some social security programs like old age pension, VGD, UGF, disabled allowance, and freedom fighters' allowances but the amount allotted to these is too meager for a person or a family. However, despite its meagerness we welcome the program as a first step toward social security system, which is so much needed due to changing social condition of the country.

Before under taking any program we need to assess the actual condition of the situation, otherwise armchair planning will end up in failure. Therefore, we need to build a database to know the numbers of old, blind and disabled who live below poverty level and need external support. There are however, some estimates about all this through very small sample surveys, but these are not sufficient for making a comprehensive plan. We think respective department of the government should have its own database for planning and successful implementation of the program.

We strongly suggest that there should be a centralized databank whose responsibility will be to collect data from different sources and save them in Bangladesh Bureau of Statistics. Whosever needs data may ask first the data bank authority about its availability. This is how time and energy will be saved and pragmatic program planning possible. Table 7.1 shows strategies and policy options to ensure social security and protection.

Table 7.1: Sustainable Development Strategies for Social Security and Protection

Social Security/ Protection	Strategy for Ensuring the rights of the citizen	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Quality Health and Sanitation Services	• Ensuring access to health services including physicians, paramedics, nurses etc. for all • Pulling government and NGO funds for making sanitary materials available to people at an affordable cost. • Health education programme for informing people about effect of unsafe drinking water	• Develop clinical waste management system • Awareness and training programme on clinical waste management • Supply technology for purifying arsenic contaminated and other surface water	• Creating health awareness among people • Intensive awareness and motivation programme for adopting sanitation and family planning • Making services and contraceptives available to people at a minimum cost.	• Capacity building of human through training of paramedics, nurses, health workers • Capacity building of Institutions through infrastructure development, producing physicians, nurses and paramedics
Minimum shelter for all: access to services/utilities	• Ensure minimum housing facilities for all in both rural and urban areas • Rehabilitation strategy for the people displaced by disasters • Ensure safe drinking water to all houses in both urban and rural areas • Ensure people's involvement in natural energy resource like coal, gas etc. • Ensure electricity supply for all • Electricity supply networks to be constructed through out the whole country	• Conservation of natural water bodies • Develop environment friendly fuel consumption mechanism (i.e. improved stove, solar cooker, solar energy etc.) • Natural gas must be used for producing electricity to keep lower emissions from energy industry • Promotion of renewable energy (solar energy, biogas, wind energy etc) • Supply soft loan for housing to medium to poor people in both rural and urban areas • Budget allocation for housing of the poor • Construction and repair of multipurpose community based shelters for disaster mitigation • Installation/Construction of waste water treatment plants in all urban areas • Provide support for construction of rain water harvesting plants in both rural and urban areas	• Make the people aware about their fundamental right of having a minimum housing facilities • Create awareness against water pollution • Raising awareness among people for Institutionalization of campaign for efficient use of water and judicious use of fuel resources, renewable energy uses • Community base training programme on treatment of waste and arsenic contaminated water • Training and motivation programme for harvesting rain water, efficient use of fuel i.e. improved stove, solar cooker, solar energy etc. • Provide training to the community people for management and maintenance of the shelters	• Excavation and Re-excavation of ponds, canals for water conservation for dry season • Identify needs and sources of fuel resources through community consultation • Increase efficiency of PDB through capacity building of the staffs and construction of new plants • Lobbying, Advocacy, Negotiation with developed countries for technology transfer • Publicity of the National Water Policy among all types of people

Table 7.1: Sustainable Development Strategies for Social Security and Protection (Continued …)

Social Security/ Protection	Strategy for Ensuring the rights of the citizen	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Quality Education for all	• Ensure education for all	• Include environmental issues in primary and secondary curriculum in detail	• Ensure primary and secondary level universal education • Reducing gender disparity at all educational level • Improving the quality of education in all types of educational system • Increasing the number of technical institutions and universities • Strictly enforcing the compulsory education law and child marriage law • Raising Community awareness towards bad effect of illiteracy and lagging of female students	• Compulsory 100% enrolment at primary and secondary levels • Incentive systems for both teachers and students at primary and secondary education level • Building new educational infrastructures (schools, colleges, vocational institutes, training institutes, research institutes) • Creating job opportunity for high school educated females • Special incentive system for female students at all levels educational system • Special attention to be given to ensure enrolment of all female children at primary and secondary levels
Social safety Net	• Ensure food security for all • Ensure health facilities for all	• Encourage farmers to use bio fertilizer and pesticides • Agro-based industry to be developed • Irrigation technology to be improved and power supply for irrigation must be ensured • Build sufficient food stock for meeting scarcity • More labour intensive industries to be constructed	• Education and training programme on scientific farming system for all farmers • Incentives to the farmers, old, widow and disabled • Establish more fertilizer industry	• Introduction of health insurance in government, semi-government and private organizations as well as farmers and this should be supported by law • Compensation for health hazards in different workplace by formulating rules and its implementation

Table 7.1: Sustainable Development Strategies for Social Security and Protection (Continued …)

Social Security/ Protection	Strategy for Ensuring the rights of the citizen	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Gender equity/ women empowerment`	• Equity and equality issues of women has to be ensured	• Ensure women's participation in environment and natural resources management plans and programmes	• Building awareness about women's right	• Empower women through providing technical and vocational education, support for higher education, protection their property rights, removing religious constraints and misconcepts by laws • Equity and equality issues of women should be established by law • Institutionalization of awareness, advocacy and campaign for women
Special Services for children, aged and disabled	• Ensure nutrition for all children through special health care programme • Special education and employment opportunities for disabled • Special fund to be generated for children, disabled and aged		• Campaign in favor of enacting child rights laws should be launched in the media and with the members of the parliament • Organizing community for social acceptance for disable people • Training for social workers for rendering services to the old and disable people	• Enactment and strictly implementation of the law for child, disabled and aged rights • Provide training to the grassroots health workers to assess and care nutritional, medical and emotional needs • School based nutrition programme to be introduced
Provide employment opportunity		• Create opportunities in information and technology sectors, set up agro-based industries in rural areas	• Ensure gender equality in recruitment of workers and employees	• Vocational training institutions need to be established by both govt. and private organizations

Table 7.1: Sustainable Development Strategies for Social Security and Protection (Continued …)

Social Security/ Protection	Strategy for Ensuring the rights of the citizen	Strategy for Environmental Sustainability	Strategy for Social Development and Sustainability	Policy Support and Institutional Capacity Building
Access to information and communication facilities	• Establish rights of the citizen in access to all types of information • Create information booth in each government and non-government office about the services they are providing to people.	• Establish community based information centre on environment and natural resources	• Make people awareness on their rights on access to information at a greater pace	• Institutional ideology needs to be changed to pro-people service oriented rather than simply following the rules of the offices
Marginali-zation			• Financial and emergency support through increasing micro-credit with flexible installment and supply emergency relief.	• Skill development training for self-employment and skilled workers for home and abroad • Policy should be adopted on exploring foreign labor market for skilled and unskilled workers
Cultural Diversification	• Constitutional rights of all ethnic and religious groups should be ensured • Ensure the freedom of all marginal groups to practice their faiths, customs, rituals and life-style	• Rights of the environmental sensitive ethnic groups (Murong, Monipuri, Garo etc) must be preserved	• Campaign and awareness programme should be made strong to dispel misgivings about different ethnic groups • Education for different ethnic groups must be ensured	• Rights of equity & equality of all ethnic and marginal groups to be included in text books of different academic level • Enacting new laws against discrimination of ethnic groups • Develop mechanism of understanding each other culture and religious practices through research • All agreements with ethnic minorities must be respected by the government

The vision of Bangladesh NSDS in the context of environment is to ensure environmental protection for humans, ecosystems and resources. For Natural Resource Management (NRM) the goal of the NSDS is to promote the conservation, augmentation and efficient utilization of the natural resources. This section of the NSDS report covers water, land and bio-diversity as natural resources and suggested strategies for sustainable environment management .

8.1 Water Resources

Water is one of the important natural resources and lifeline of many economic and livelihood activities in Bangladesh. Considering its vital importance National Sustainable Development Strategy gave special attention to water. Water resources management in Bangladesh faces immense challenge for resolving many diverse problems and issues. The most critical of these are alternating flood and water scarcity during the wet and the dry seasons, ever-expanding water needs of a growing economy and population, and massive river sedimentation and bank erosion. Every public agency, every community, village and each individual has an important role to play in ensuring that the water and associated natural resources of Bangladesh are used judiciously so that the future generations can be assured of at least the same, if not better, availability and quality of those resources. This section summarizes existing policies related to water security and strategies to ensure water security.

The economic growth and development of Bangladesh has been all highly influenced by water – its regional and seasonal availability, and the quality of surface and groundwater. Spatial and seasonal availability of surface and groundwater is highly responsible to the monsoon climate and physiography of the country. Availability also depends on upstream flow and withdrawal for consumptive and non-consumptive uses. In terms of quality, the surface water of the country is unprotected from untreated industrial effluents and municipal wastewater, runoff pollution from chemical fertilizers and pesticides, and oil and lube spillage in the coastal area from the operation of sea and river ports. Water quality also depends on effluent types and discharge quantity from different type of industries, types of agrochemicals used in agriculture, and seasonal water flow and dilution capability by the river system of the country and of upper riparian countries.

The contribution of local rainfall to the annual surface runoff is about 25 per cent, with significant seasonal variation. Annual rainfall and evapotranspiration of the country show that there is a substantial excess of rainfall everywhere in the monsoon season. From the annual overall averages, dependable rainfall exceeds evapotranspiration by over 10 per cent in most parts of the country, except in the Northwest (NW) and Southwest (SW) regions. In the NW region, rainfall and evapotranspiration are almost equal, but in the SW the overall deficit is about 10 per cent. From November to May, evapotranspiration exceeds rainfall all over the country, except in the Northeast (NE) region. The largest use of water is made for irrigation. Besides agriculture, some other uses are for domestic and municipal water supply, industry, fishery, forestry and navigation. In addition, water is of fundamental importance for ecology and the wider environment. Even where sufficient long-term freshwater resources do exist, seasonal or annual variations in the availability of freshwater may at times cause water quality degradation.

Bangladesh has two problems with water i.e. scarcity of water for agriculture, industrial and domestic uses in the dry season and sometime, abundance of water in monsoon causes flood and natural hazards. It is viewed that the country would face serious scarcity of fresh water for agriculture, industry, fisheries and other livelihood activities in near future. Three things happen; flow of up-stream water is decreasing and ground water level is going down particularly in the dry season and at the same time, saline water is intruding to the inland area. The water development and flood control projects have serious negative impacts on wetlands, fisheries and on the ecosystems of some parts of the country.

The increasing urbanization and industrialization of Bangladesh have negative implications for water quality. The pollution from industrial and urban waste effluents and from agrochemicals in some water bodies and rivers has reached alarming levels. The

long-term effects of this water contamination by organic and inorganic substances, many of them toxic, are incalculable. The marine and aquatic ecosystems are affected, and the chemicals that enter the food chain have public health implications. Water quality in the coastal area of Bangladesh is degraded by the intrusion of saline water that has occurred due to lean flow in the dry season. This affects agriculture significantly, as well as other consumptive uses of the water. A common phenomenon in the lower riparian countries is that of enough water in monsoon, but water scarcity during the dry season. It is also common in Bangladesh for areas that were once inundated facing water scarcity in the dry season. Dry season water availability depends on water use for irrigation, dry season rainfall and withdrawal or diversion of water upstream. It has implications for navigation, and the wetland ecosystem and its productivity.

8.1.1 Objective

Key objectives suggested related to water resources to support different economic and livelihood activities are a) access to the transboundary water sharing, b) access to affordable safe drinking water, c) ensure sufficient irrigation water for dry seasons including conservation of the water bodies, d) secured quality water for domestic use, e) ensure quality water for conservation of biological diversity.

8.1.2 Existing Policy and Institutional Arrangement for Water Security

Policy Support

Numbers of policies were formulated to address the quality and availability of the water in Bangladesh to face the increasing population growth and their needs. The major policies may include:

- National Water Policy, 1999 provides a framework for holistic and participatory water resources management in Bangladesh
- National Water Management Plan, 2004 invokes the principles of IWRM that focuses on coordinated development and management of water with due regard to all its sources as well as its uses and users
- Bangladesh has adopted National Policy for safe water supply and sanitation, 1998
- Prepared Water Supply And Sanitation Master Plan elaborating the policy guidelines for providing drinking water supply and sanitation facilities for all by 2010 and accordingly action programs have undertaken involving NGOs, private sectors, CBOs, community of development partners as outlined in NWMP and PRSP
- Adopted full Poverty Reduction Strategy Paper (PRSP) with action programs. Poverty focused water related priority action programs as such water supply and sanitation, rationalization of existing FCD/I schemes, Arsenic mitigation programs along with institutional reforms and enabling environmental cluster programs have included in PRSP
- Integrated Coastal Zone Management Plan (ICZMP) has been formulated along with Coastal zone policy, Coastal Development Strategy, Investment portfolio programs, and Other supporting studies
- National Policy for Arsenic Mitigation 2004: The goal of this policy is to provide safe drinking water for domestic use in arsenic affected areas (WB, 2006). The government initiated several programmes in such areas to reduce future adverse impacts of it and meet the policy goal.
- National Sanitation Strategy 2005: The national sanitation strategy was basically developed to outline the ways and means of achieving national targets providing guideline to concerned addressing key sector issues, defining roles of various actors and creation of enabling environment for success. This strategy directs relevant government institutions, NGOs, private sectors to develop and implement their own action plan to achieve 100% sanitation by 2010 (GOB, 2005).

Institutional Support

A number of departments and institutions under different ministries are directly and indirectly involved with water related activities and management in Bangladesh.

Activities of each department and agency were driven by their sectoral policy and institutional mandates. The key institutions involved in water resource management are a) Ministry of Water Resources (MWR) with the mandate of policy formulation, development of plans and strategies, guidelines, instructions and acts, rules, regulations and implementation of different activities through line agencies and departments; b) Ministry of Local Government Rural Development and Cooperatives (MoLGRD&C); c) Bangladesh Water Development Board (BWDB); d) Water Resources Planning Organization (WARPO); e) Department of Environment (DoE); f) The Department of Public Health Engineering (DPHE); g) Water Supply and Sewerage Authority (WASA).

8.1.3 Proposed strategy for water security

Ensure Community Access to Water Bodies

Bangladesh is rich in community level experiences of water management. Most of the poor in the country depends on common property water resources such as rivers, lakes, canals and small wetlands. Many of these resource management efforts and projects are organized or supported by local government agencies.

There are well developed practices of eco-specific participation management in several areas in the country. There is a need to develop better understanding of social practices, common property management issues, access to water bodies and role of different actors such as government agencies, NGOs, elites etc.

Based on such a review and analysis a typology of management practices, ecosystems and water based services could be identified. This can form a basis for improving community based practices and enhancing access for the poor.

Water pollution management

The three major sources of water pollution in Bangladesh are from industrial wastes, agrochemical (fertilizer and pesticide), raw sewage and some solid waste from urban areas. All these are have different sources, can affect different locations and water bodies, sometimes they combine. Though the country has dedicated ministries or departments for pollution management with mandates and legal structures, the implementation is often poor.

Health, Sanitation and Hygiene

Much of the poor in the country do not have adequate sanitation and poor hygienic practices and contaminated drinking water are major health threats. The MDG around sanitation has given a boost. But more needs to be done at local, regional and national level.

Greater use of media, communication tools, activation of local government, NGOs, community groups, religious institutions are required. A more focused and concerted effort is required across the country on health protection from water hazards and water borne disease, better sanitation and mass awareness on hygiene.

Increasing Water Efficiency and Reducing Waste

Despite Bangladesh being blessed with water, there is a huge wastage of water in the irrigation, industrial waste management as well as urban sectors through leakages and mismanagement. A study needs to be conducted on how to improve water efficiency and capacity building in efficient use of water. Water waste reduction is often not a consideration in water planning.

Capacity building in water efficiency measurements and waste reduction as well as actions to be undertaken need to be developed in all major cities as well as water utility service provider. In irrigation, water efficiency is also a major issue and waste reduction practices need to be identified, developed and implemented. Sustainable water resources management practitioners can work with water managers on water efficiency and waste water reduction.

Understanding and Assessing Indigenous Knowledge for water security

Bangladesh is rich in indigenous knowledge and practices around extraction, utilization, transportation and storage of water. Areas with excess water or flood prone areas have their own indigenous practices as do water-stressed areas such as drought prone or desert areas.

Awareness, Campaign and Advocacy on Sustainable Water Management Concepts, Principles and Methods

Earlier study highlights that there is a need for massive awareness and advocacy at the highest policy level of government water related decision makers as well as private sector leaders. A campaign with appropriate tools and documents at national levels will need to be organized. A series of workshop of awareness and training of water project personnel will also be essential.

Improve utilization of surface water

Surface water utilization for most of the sectors including agriculture, industrial, domestic etc may need to be improved. Considering population growth and demand for different sectors, sustainable option would be more utilization of surface which would ultimately reduce pressure on ground water extraction.

Ground Water Management

Groundwater is still the main source of water supply in urban and rural areas of Bangladesh for all the sectors. Bangladesh is entirely underlain by water bearing aquifers at depths varying from zero to 20m below ground surface, except for few hilly regions. This groundwater resource is under threatened because of the following reasons (BUET, 2004):

- Arsenic in groundwater;
- Salinity in the shallow aquifers in the coastal areas;
- Lowering of groundwater level;

In addition, rate of ground water recharge is lowering may be due to increase of surface (concrete) development, huge extraction of groundwater etc to meet the demand. Initiatives need to be taken to reduce pressure on ground water resources.

Rainwater harvesting policy

Innovative rain water harvesting technology, which can be practiced at household level, needs to be developed and initiated at both rural and urban level. Successful technology inside the country can be followed, at the same time, efficient technology cab be borrowed from outside the country, if practicable.

Integration among major players in water sector

Four major sectors namely water, agriculture, energy and health may need immediate integration in sectoral policy, institutional arrangement and implementation of projects and programmes. An Integrated Water Resources Management (IWRM) Plan can be developed considering existing and future importance of these four sectors.

Build on Existing Capacity and Efforts

The first law of capacity building is capacity utilization. In all efforts of capacity building on water resources management, knowledge, skill development, technology innovation-dissemination and community level management of water and water related services, the existing capacity must be recognized, assessed and utilized. Based on sound assessment of what people know including indigenous knowledge, what institutions do including their social and institutional capital should be utilized in new initiatives of sustainable water resources management.

Climate Change, Extreme Weather Events and Adaptation Activities

According to both the Third and Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) Bangladesh is going to be affected by impacts of climate change. Further, predominance of poor in Bangladesh makes the communities particularly vulnerable. Bangladesh coastal area is most vulnerable to cyclones and sea level rise. North-west districts of the country are vulnerable to enhanced drought. So most communities in the country are likely face the enhanced weather related extreme events such as floods and cyclone as well as drought. Thus most climate change impacts will be related to excess or lack of water flow. There is a need to undertake adaptation measures to mobilize for preparation and to reduce climate risks. Adaptation policies, actions and community level projects will need to be undertaken soon. Activities Identified in NAPA as well as community level adaptation projects may be considered priority areas for integrated water security engagement.

8.2 Forestry

Even though forestry sector plays an important role in agriculture sector as well, the NSDS is focusing on forestry as a natural resource. The main reason for the degradation of forestry resources are population pressure, poverty, intensive agriculture and land degradation. Forestry contributes to a great extent to the economic and ecological stability of Bangladesh. According to a recent estimate, total forestlands including plantations, gardens, and homesteads cover about 2,600,000 hectares in Bangladesh, which is 17.87 per cent of the land surface of the country.

Most of the forests of Bangladesh are located in the Greater Districts of Chittagong, Chittagong Hill Tracts (CHT), Sylhet, Khulna, Dhaka, Mymensingh, and Tangail. The moist deciduous forests are found in Dhaka, Mymensingh, Rangpur, Dinajpur, and Rajshahi districts. In the coastal areas, plantations have been established on the newly accreted char land. The types of forests that are found in Bangladesh are:

1. Hill Forest
   a. Reserved Forest
   b. Unclassified State Forest
2. Plain-land Forest
   a. Deciduous Forest
   b. Village Forest
3. Mangrove Forest
   a. Sundarbans Natural Forest
   b. Coastal Afforestation
4. Social Forest
5. Tea Gardens

Mainly the Hill Forests, Plain-land Forests and the Mangrove Forests are under the management of the Forest Department.

Throughout the country the forestlands are largely devoid of adequate natural cover, except negligible forest pockets. To conserve plants and other biodiversity, the GoB have declared a number of protected areas throughout the country. However, a vast majority of land designated as forests is without tree cover. Most of the protected areas are not properly managed due to lack of proper implementation or enforcement of existing rules, as well as inadequate facilities.

8.3 Bio-Diversity

"Biological Diversity" means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part; it includes diversity within species between species, and of ecosystems (Article II, CBD, 1992). Literal meaning of biodiversity is the diversity of all life forms on earth. This includes the various races and species of all microbes, plants, and animals that live on earth, including their genetic differences, i.e., the gene pool of each species.

Bangladesh is a transitional zone of flora and fauna, because of its geographical settings and climatic characteristics. As mentioned in the overview section of the report that there are many rivers and streams existing in the country covering a length of 22,155 km. In addition to the regular inland waters, seasonally a large part of the country remains submerged for 3-4 months during monsoon.

The IUCN Bangladesh Red Data Book (2000) has described 266 species of inland fishes, 442 marine fishes, 22 amphibians, 109 inland reptiles, 17 marine reptiles, 388 resident birds, 240 migratory birds, 110 inland mammals, as well as 3 species of marine mammals in Bangladesh. According to the Red List of IUCN, there are 54 species of inland fishes, 8 amphibians, 58 reptiles, 41 resident birds, and 40 mammals, which are threatened throughout the country. Among the marine and migratory species of animals, 4 fishes, 5 reptiles, 6 birds, and 3 mammals are threatened.

The depletion of biodiversity is the result of various kinds of human development interventions and activities, especially in the areas of agriculture, forestry, fisheries, urbanization, industries, chemicals, minerals, transport, tourism, and energy. The major threats to biodiversity are:

- Destruction of habitat
- Overexploitation of flora and fauna
- Indiscriminate use of agro-chemicals
- Industrial waste disposal.
- Oil leakage from ships

- Encroachment into the natural forests
- Change in land use pattern and land use conflict

The Government of Bangladesh has taken various steps in response to the need for conservation of indigenous biodiversity. Some major ones are as follows.

8.3.1 Institutes, Policy and Legal Framework

There are various research institutes involved in biodiversity-related research in Bangladesh. They directly or indirectly help in conservation of biodiversity through various multi-directional research projects.

The Bangladesh National Biodiversity Group (BNBG) was formed on August 1, 1995 to initiate a national database of biodiversity, as well as provide scientific and technical advice on national policy formulation for biodiversity.

As a policy response to reducing biodiversity depletion, Bangladesh has become a signatory to about 28 environmental treaties, conventions and protocols. Bangladesh signed the Biodiversity Convention at Rio in 1992, and ratified it in 1994. A focus on biodiversity has been emphasized in the Forest Policy and Environment Policy. However, a separate policy on biodiversity is yet to be formulated, and until then various departments of the government are responsible for conservation of biodiversity. The Bangladesh National Biodiversity Strategy and Action Plan is under preparation as a national obligation to the Convention on Biological Diversity.

The Forest and National Environment Policy sets the policy framework for some biodiversity and environmental action, in combination with a set of broad sectoral guidelines.

As mentioned above, there are no direct Acts and Rules in Bangladesh regarding conservation of biodiversity. Under these circumstances, the following existing acts and rules have been found relevant to the conservation of biodiversity:

- The Protection and Conservation of Fish Act, 1950.
- The Protection and Conservation of Fish Rules, 1985.
- The Private Fisheries Protection Act, 1889.
- Bangladesh Fisheries Development Corporation Act, 1973.
- The Marine Fisheries Ordinance, 1983.
- The Fisheries Research Institute Ordinance, 1984.
- Wildlife Preservation Act, 1974 (Amendment Act 1994).
- Forest (Amendment) Act, 1990.
- Forest Act, 2000 (Amending Act, 1927).
- The Environment Conservation Act, 1995.
- The Environment Conservation Rules, 1997.

The idea for a National Conservation Strategy (NCS) emerged in September 1986. Through this NCS Phase 1, one major program was implemented in four distinct ecosystems - tropical and mangrove forest areas, St. Martin's Island, Tangour Haor, and Barind Tract. The main objectives of all these activities are conservation of biodiversity.

Other projects that were implemented for the protection of biodiversity are:

- Coastal and Wetland Biodiversity Management
- Integrated Coastal Zone Management (ICZM)
- National Biodiversity Strategy and Action Plan
- Conservation and Management of Medicinal Plants
- Sustainable Environment Management Program (SEMP)
- Management of Aquatic Ecosystem through Community Husbandry (MACH)
- Sundarbans Biodiversity Conservation Program
- Forest Resources Management Project
- Biodiversity Survey in 13 Protect Areas

8.4 Land

Land is the basic natural resource that provides habitat and sustenance for living organisms, as well as a major abode of economic activities. Degradation of land refers to loss of its potential production

capability as a result of degradation of soil quality and also its loss for effective use. In Bangladesh, the topsoil degrades due to natural processes and human activities. The functional capabilities of soil deteriorate from activities related to agriculture, forestry, and industry. On the other hand, urban sprawling and infrastructure development cause loss of available land. Natural events such as cyclones and floods cause land loss, and can also deteriorate functional capabilities of soil. Soil degradation in the coastal area results from unplanned land use, as well as intrusion of saline water. Therefore, solving or minimizing land degradation problems should be based on multi-sectored, multi-layered, yet integrated approaches.

There are many driving forces compelling people in Bangladesh to over-exploit natural resources like land. The main ones are the poverty with rapid population growth, improper land use, absence of a land use policy, and ineffective implementation of existing laws and guidelines. Unplanned agricultural practices, and encroachment on forest areas for agriculture and settlements, also put pressure on scarce land resources. Unplanned or inadequate rural infrastructure development and the growing demands of increasing urbanization are also devouring productive land. The level of land degradation and its extent vary seasonally and yearly, by region, as well as the pressures on land are not always the same either.

Human interference and waterborne action are the two most important land degradation processes in Bangladesh.

Many human activities are based on land, and therefore are influenced by unwise and improper use of land resources. A number of stakeholders are involved in land use and land management, from both the government and private sectors. The demands of a growing population is the prime driving force that lead to deterioration of the quality and quantity of soil and land. A number of policy measures and practices have been initiated over the last decade to mitigate these. However, implementation of these measures is not adequate to combat land degradation.

The most important policy measure that is required for addressing land degradation is an integrated land use policy with respect to agriculture, industry and environment. Noting the importance of such a land use policy, the Government of Bangladesh has already made some progresses in this direction. (Sustainable Land Management project)

8.4.1 Institutions and Policy

A number of institutions are involved in addressing issues related to land and preventing land degradation, ranging from the legal to management. The Ministry of Land particularly deals with legal aspects of land through their different wings. They are also associated with the land acquisition process for development work. The Ministry of Agriculture through the Bangladesh Agricultural Research Council (BARC) deals with productivity aspects of land. Under the same ministry, the Department of Agricultural Extension (DAE) undertakes extension of the research outcomes of the institutes mentioned above. The Department of Environment (DoE) under the Ministry of Environment and Forest (MoEF) deals with aspects of land pollution. Table 8.1 describes the strategies and policy issues for sustainable environment and natural resource management.

Table 8.1 Sustainable Development Strategies for Environment and Natural Resource Management

Sector	Strategies for ensuring access to natural resources	Strategy for environmental sustainability	Strategy for social development and sustainability	Policy Support and Institutional Capacity Building
Water	• Ensure access to water bodies through improving community based practices and enhancing access for the poor • Ensure safe water for drinking and sanitation purposes • Develop mechanism for reduction of waste practices and efficient use of water involving sustainable water resource management practitioners, water managers and indigenous knowledge • Appropriate rain water harvesting technology needs to be developed • Integrated water resources management plan needs to be developed	• Identify pollution sources and enhancement of implementation of pollution laws • Strengthening regional advocacy and lobby for sharing transboundary water • Conservation of the water bodies • Management of water and climate related extreme events • Adoption of preparedness, coping and adoption mechanisms for water and climate related disasters- Suggested by BUP • Identify typology of management practices and water based management services	• Develop better understanding on social practices and common property management issues • Raising awareness using media, communication tools, campaign towards bad effect of using contaminated water • Capacity building of rural and urban communities as well as water utility service provider are needed for efficient use of water	• Institutionalization of awareness programme through activation of local government, NGOs, community groups and religious leaders • Need for massive awareness, advocacy and campaign at the highest policy level of government water related policy makers as well as private sector leaders • Ground water management plan needs to be developed to reduce pressure on it • Need to undertake adaptation measures to reduce climate risk

Table 8.1 Sustainable Development Strategies for Environment and Natural Resource Management (Continued …)

Sector	Strategies for ensuring access to natural resources	Strategy for environmental sustainability	Strategy for social development and sustainability	Policy Support and Institutional Capacity Building
Bio-diversity	• Protect rights of indigenous/ traditional knowledge of local communities with regards to benefit sharing	• Promote conservation of species diversity • Promote conservation of Fresh water wetland and coastal biodiversity through implementing NBSAP • Promote management of plant genetic resources through assessment of present status, promotion of national gene bank to enhance effective conservation, utilization etc., and development national framework in line with CBD • Promote National Programme of Action on Germplasm • Control unsustainable consumption of biological resources • Identify threat to biodiversity from climate change and other • Undertake effective programme on biochemical and molecular characterization of germplasm • Integration of traditional and scientific knowledge • Effective measures for in-situ preservation and documentation of germplasm	• Protect traditional/ indigenous knowledge, practices and innovations related to biodiversity • Prepare community based management plan for conservation of biodiversity • Strengthen HRD on Biodiversity conservation and management • Domestication of under-utilized traditional forest crops and products	• Identify status of threatened and endangered plants and animal species and causes of threats through research • Enhance capacity in maintaining and promoting resilience of the component of biodiversity through effective measures

Table 8.1 Sustainable Development Strategies for Environment and Natural Resource Management (Continued …)

Sector	Strategies for ensuring access to natural resources	Strategy for environmental sustainability	Strategy for social development and sustainability	Policy Support and Institutional Capacity Building
Sustainable Environment Management	• Integrating environment with development • Protect the right of indigenous and local tribes and communities over their knowledge, innovations and practices including their right to benefit sharing.	• Integrating environmental and sustainability considerations in the policies/programmes relating to infrastructure, industry, forest, fisheries, water, land, agriculture, energy, livestock • Control pollution of air, water and land • Promote solid waste management system • Monitor industrial pollution and make industries to take pollution control measures • Protect traditional knowledge, innovations and practices with regard to climate change adaptation, biodiversity conservation, combating land degradation etc. • Undertake effective programme to recycle, reduce and reuse of solid waste • Appropriate measures need to be taken to reduce land pollution for agriculture sector	• Involve local community and stakeholders in environment and development related programmes and give them ownership • Utilization of indigenous/ traditional knowledge •	• Strengthening institutional capacity and framework of relevant sectors to address sustainable development and environmental issues • Enforcement of all environmental rules and acts and strictly follow EIA guidelines • Integration of climate change issues with all other policies, programmes and projects including community based adaptation project, capacity building programmes for integrating climate change in to sectoral planning and implementation, action research on climate change mitigation and adaptation, coordinate NAPA with all public private and community level stakeholders • Strengthening of regulatory measures against industrial emissions, wastes and effluents • Promote public private partnership in waste removal from cities • Formulating framework and building capacity to deal with trans-boundary hazardous waste under Basel Convention

Table 8.1 Sustainable Development Strategies for Environment and Natural Resource Management (Continued …)

Sector	**Strategies for ensuring access to natural resources**	**Strategy for environmental sustainability**	**Strategy for social development and sustainability**	**Policy Support and Institutional Capacity Building**
Land	• Identify the fallow land and distribute among landless • Developing land use policy and plan • Appropriate strategic plan needs to be developed for efficient use of newly accreted land	• Protect land from industrial and agro-chemical pollution • Undertake programme on combating land degradation and rehabilitation • Undertake programme on integrated organic farming		• Undertake training programme for relevant agencies on land management and land resource development • Research on increase productivity on land

Addressing the governance challenge will also not be easy. The governance agenda is large and cuts across a wide range of institutions and threatens powerful vested interests. Developing a strategic, sequenced approach that relies on success in a few key areas to generate momentum and demand for reform in other areas will be crucial. Summoning the political will to do this will not be easy, and will itself depend on strong political leadership and a public that demands reforms and shows lower tolerance for weak governance (BSSG: WB: 2007).

Area		Sub-Area	Tasks
1.	Democratic norms, political commitment and will.	· Avoidance of confrontational politics.	· Dialogue among various parties on a common forum and public declaration.
		· Democratization of the political parties	· Review of party constitution. Adoption of changes leading to more democratization. · Ensure compliance of the provisions of the party constitution.
		· Expression of commitment for good governance	· Inclusion as a well thought of and specific item of the party's political agenda. · Follow-up when in power. · Constructive criticism and support in implementation when in opposition.
		· Reduction in Election cost	· Set reasonable limit. · Enforce and ensure punishment of offenders. · Declaration of assets and antecedents by election candidates
2	Transparency	· Freedom of press and media	· Review laws and rules and omit/ amend to provide requisite freedom · Training of press and media personnel to aware them of the rules of game and code of conduct.
		· Access to information	· Review the Official Secrets Act and ensure public access to information after identification of the minimum area of secrecy. · Regular briefing to press by accredited representatives at all level of administration.
		· Use of electronic media	· Opening of website and transmission of information relating to activity for public access and scrutiny.
3.	Accountability	· Deterrence	· Strengthening of the Public Accounts Committee. · Strengthening of the Comptroller and Auditor General's Office. · Full scale operationalization of the BAC. Review and updating of anticorruption laws. · Ensure early formation and functioning of Parliamentary Committees immediately after each newly elected Govt. takes over. · Allow press access to deliberation and through press, public access to information. · Build up and publicize the institution of Ombudsman.

Area		Sub-Area	Tasks
4.	Rule of Law	· Image of the judiciary	· Separation of judiciary from the executive. · Appointment to higher courts through Supreme Judicial Council, - Criteria being fitness and not political colour/ consideration.
		· Quick dispensation of justice	· Review of judicial procedure and simplification/shortening of steps involved
		· Ombudsman	· Quick dispensation of justice
		· Judges accountability	· Formation of a code of conduct and fixation of authority to impose that code and punish the law breakers.
5.	Decentralization of power and participatory approach	· Empowerment of the people	· Review and revive district and upazila level system of governance after taking care of past pitfalls. · At the Upazila level clearly define the jurisdiction of the Upazila Chairman and the MP. · With gradual increase in competency, leave more and more work relating to execution of projects at these tires with allocation of fund. · Bottom up approach in planning and execution of work. · Make all information open to the people.
6.	Human Resource Development	· Education	· Aim to ensure education for all up to a certain pre-determined level · Free books, other incentives · Increase school capacity by increasing school shifts · Provide technical education in line with demand of working hands from abroad · Use missions abroad to supply information.
		· Training	· Institutions to train up service cadres · Non-cadre organization to have in-built system of training. · Training abroad in high-tech cases.
7.	Updating Laws, Rules and Regulations	· Review, rescind and update	· Review commission · Proper publicity about the commission · Consultation with the effected ones · Review, rescind and update obsolete ones.

Area		Sub-Area	Tasks
8.	Gender Issue	· Women's rights and advancement	· Integrate gender concern in sectoral activities. · Preferential leverage in education · Ensure equal wage · Violence against women be dealt with expeditiously with deterrent punishment
		· Participation in decision making	· Enhance political empowerment · Equal right to election · Create supportive environment at the local level. · Sensitize local representatives to ensure proper role for women representatives in local development works.
9.	Recruitment to Constitutional Posts	· Supreme Court · High Court · Election Commission · Public Service Commission · Attorney General · Ombudsman · Comptroller and Auditor General	· Adopt a selection procedure which is transparent and beyond the reach of political consideration.
10.	Environment (Climate Change)	· Safety Net	· Accurate information · Safety Net for frequent cyclone, flood etc. · International Contacts

Institutional framework for implementation and monitoring of the progress of the National Sustainable Development Strategy (NSDS) is one of the significant aspects of the strategy. Without an institutional framework, implementation and monitoring along with keeping coherence among the different sectors and thematic areas would be difficult. The institutional framework suggested here keeping the following in mind.

- Based on existing organizational arrangement for national environmental management with the objective of setting up of the National Council for Sustainable development (NCSD) or any other appropriate body;
- Based on review the existing organization arrangement for environmental management and initiate a process to establish a multi-stakeholders structure following the country specific guidelines under the guidance of National Focal Point (NFP);
- The National Council for Sustainable Development (NCSD) or any other appropriate body that will comprise members from Government, Private and major groups as identified in Agenda 21;
- The number of members in the council/committee will be decided by the national government and head of the council/committee will be senior official or head of the government;
- Keep a good balance between governmental and others needs to be attained with appropriate representation of the civil society, private sector and academic group;
- To support activities of the multi-stakeholder council/community would be necessary and could be done by setting up a secretariat within the Ministry of Environment and Forest or Department of Environment (DoE).

It is revealed for the thematic assessment and stakeholder consultation process under National Capacity Self Assessment (NCSA), almost all, have recommended formulating an apex body in the form of "Sustainable Development Commission (SDC)". The status of the Commission would be like National Economic Council (NEC) or National Implementation Committee on Administrative Reorganization (NICAR).

The objectives of the apex body are to ensure sustainable development, the coordination mechanism among all the ministries/Divisions/Departments/Agencies and to develop partnership between the public and private entities. The nature of the proposed Commission will be advisory, as a facilitator with some regulatory authority.

10.1 Suggested Sustainable Development Monitoring Council

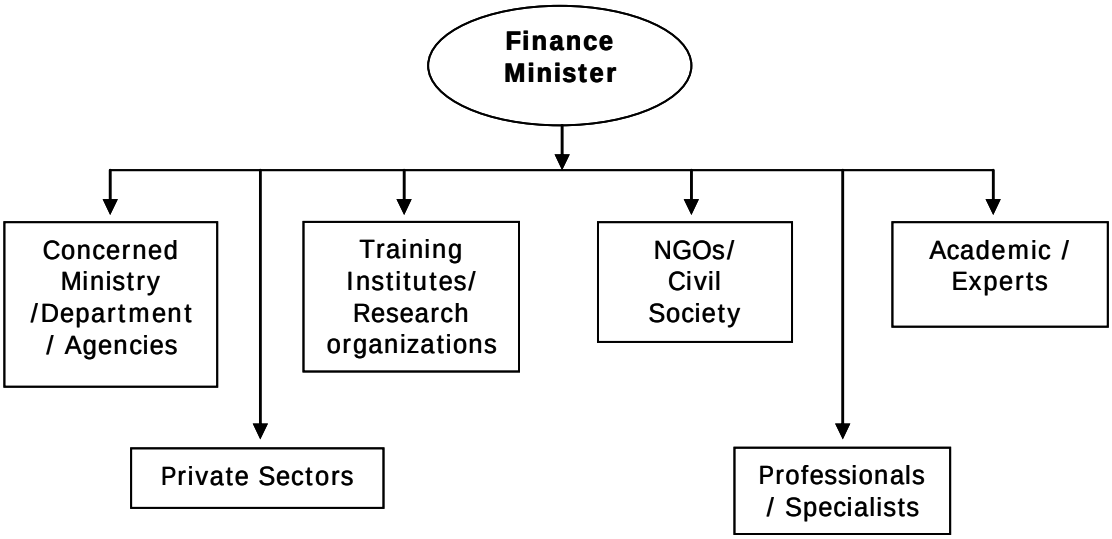
The institutional framework suggested for implementation of National Sustainable Development Strategy (NSDS) is primarily based on outcome of a "Policy Dialogue on Institutional Framework for Sustainable Environmental Governance" was organized on the 31st of August 2007 in Dhaka. This Institutional Framework has also been shared during the national consultation organized by the National Sustainable Development Strategy held in February 17-18, 2008. It is to be noted that a total of 65 high level government officials - in the rank of Joint Secretaries from various line ministries/divisions attended the dialogue mentioned above to review the proposed Framework of the Sustainable Development Commission for the future sustainable environmental governance. The concept of a body for monitoring the sustainable environmental governance has been appreciated by most of the participants including chief guest, the then Secretary, Ministry of Establishment, Government of the People's Republic of Bangladesh and Special Guest Secretary, Ministry of Environment and Forests. Finally, it has been suggested that by the participants to rename the proposed SDC as "Sustainable Development Monitoring Council" headed by Finance Minister to the Government.

Based on the recommendations of the policy dialogue, the composition of the council has been reorganized engagement of the concerned ministries, divisions, departments, agencies, research organizations, leading training institutes, NGOs, civil societies and private sectors. It has also been suggested that since sustainable development is a cross-cutting issue, the Finance Minister can be the chairperson of the Council rather than the Minister for the Ministry of Environment and Forests. The following schematic diagram

represents composition of the National Sustainable Monitoring Council.

(SRO) may be issued from the Cabinet Division, Ministry of Law, Justice and Parliamentary Affairs.

Composition of the Sustainable Development Monitoring Council



Since the mandates of the SDMC would be beyond the purview of the MoEF, a special notification Statutory Regulation Order

The suggested composition of the National Sustainable Development Monitoring Council and size is given below

Sl. No.	Name, Designation & Organization	Position
1	Minister, Ministry of Finance	Chairperson
2	Minister, Ministry of Environment and Forests	Member
3-5	3 Hon'ble Members of the Parliament (selected by Hon'ble Speaker)	Member
6	Cabinet Secretary, Cabinet Division	Member
7	Principal Secretary to the Prime Minister	Member
8	Secretary, Finance Division	Member
9	Secretary, Economic Relations Division	Member
10	Secretary, Planning Division	Member
11	Secretary, Ministry of Agriculture	Member
12	Secretary, Ministry of Fisheries and Live stocks	Member
13	Secretary, Ministry of Water Resources	Member
14	Secretary, Ministry of Energy and Mineral Resources	Member
15	Secretary, Ministry of Power Division	Member
16	Secretary, Ministry of Industry	Member
17	Secretary, Ministry of Education	Member
18	Secretary, Ministry of Science and ICT	Member
19	Secretary, Local Government Division	Member
20	Secretary, Implementation, Monitoring & Evaluation Division	Member
21	Secretary, Ministry of Land	Member
22	Secretary, Ministry Food and Disaster Management	Member
23	Secretary, Ministry of Health and Family Welfare	Member
24	Secretary, Ministry of Foreign Affairs	Member
25	Rector, Bangladesh Public Administration Training Centre	Member

Sl. No.	Name, Designation & Organization	Position
26-27	Two Professors from National Universities	Member
28	Director General, Department of Environment	Member
29	Chief Conservator of Forests, Forest Department	Member
30	Inspector General of Police, Bangladesh Police Department	Member
31	Chairman, SPARRSO	Member
32	Director General, Bangladesh Meteorological Department	Member
33	Director General, Bangladesh Water Development Board	Member
34	Director General, Water Resources Planning Organization	Member
35	Director General, Department of Agricultural Extension	Member
36	Chairman, Bangladesh Agriculture Research Council	Member
37	Chairman, BCSIR	Member
38	President, FBCCI	Member
49	Country Representative, IUCN Bangladesh Country Office	Member
40-41	2 Representatives from the Civil Society	Member
42-43	2 Representatives from the leading NGOs	Member
44	Representative, Joint River Commission	Member
45	Secretary, Ministry of Environment and Forests	Member- Secretary

Considering size of the Sustainable Development Monitoring Council (SDMC), it has been suggested to have a small professional expert group to provide technical advice to the SDMC. During the policy dialogue of NCSA, most of the participants have suggested that this body may be headed by the Cabinet Secretary and may be named as “Sustainable Development Board (SDB)”. The suggested composition of the Sustainable Development Board and size is given below.

10.2 Sustainable Development Board (SDB)

Sl. No.	Name, Designation & Organization	Position
1	Cabinet Secretary, Cabinet Division	Chairperson
2	Secretary, Ministry of Environment and Forests	Member
3	Director General, Department of Environment	Member
4	Representative, Ministry of Land	Member
5	Representative, Planning Division	Member
6	Representative, Ministry of Agriculture	Member
7	Representative, Ministry of Fisheries and Livestocks	Member
8	Representative, Ministry of Water Resources	Member
9	Representative, Ministry of Energy and Mineral Resources	Member
10	Representative, Ministry of Industry	Member
11	Chief Conservator of Forests, Forest Department	Member
12	Specialist from Bangladesh Meteorological Department	Member
13	Specialist from Bangladesh Agriculture Research Council	Member
14	Specialist from Water Resources Planning Organization	Member
15	Specialist from Bangladesh Meteorological Department	Member

10.3 Overall Role of Sustainable Development Monitoring Council

The over all role of the Sustainable Development Monitoring Council is to ensure the overall sustainable development of the country with special focus on effective implementation and monitoring progress of different elements of the National Sustainable Development Strategy (NSDS). The Council will also review the obligations and commitments under the different Multilateral Environmental Agreements (MEAs) including Commission on Sustainable Development (CSD). At the outset, the council will give thrust on the following four Strategic Priority Areas as identified as part of sustainable development of Bangladesh. The areas are as follows.

- **Sustained Economic Growth:** It will cover employment and poverty, energy, mineral resource, industry, urbanization issues
- **Agriculture and Rural Development:** It will cover fisheries, livestock, water, food issues
- **Social Security/Protection:** It will cover health, population, and disaster management along with social justice and human rights
- **Environment and Natural Resource Management:** It will cover climate change, land, forest, water, role of indigenous community, bio-diversity, pollution control

10.4 The Terms of Reference of the Sustainable Development Board

It is suggested that the Sustainable Development Board will review the implementation status of the decisions of the SDMC and provide a report to the SDMC before its meeting. It will also provide technical advice to the SDMC in implementing and monitoring strategic priority areas identified in the National Sustainable Development Strategy as well as suggests interim modification of the SD strategy for Bangladesh.

It is also suggested that the Ministry of Environment and Forests will provide the secretarial support to the Board and the Board may co-opt any other organization/expert as the member of the Board if necessary depending on needs. The Board will sit four times in a year.

10.5 Institutional Support to Sustainable Development Monitoring Council

The Sustainable Development Monitoring Council will provide overall guidance, ensure implementation and monitoring National Sustainable Development Strategy (NSDS) and therefore there is a need for supporting institution to carryout instructions and follow up with relevant ministries, departments and agencies. The existing set-up of the Ministry of Environment and Forests may not be able to provide with secretarial support to the Council and therefore a separate branch may be created under the MoEF to provide the secretarial support to the council.

The council may also require a separate budget to carry out its mandates. So, a separate budget line may be created for the council as well.

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