



OUTLINE PERSPECTIVE PLAN OF BANGLADESH 2010-2021

MAKING VISION 2021 A REALITY

**General Economics Division
Planning Commission
Government of The People's Republic of Bangladesh**

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Abbreviations

ACC	Anti-Corruption Commission
ADA	Anti-Dumping Agreement
ADP	Annual Development Programme
AfT	Aid for Trade
AIDS	Acquired Immune Deficiency Syndrome
ANC	After Natal Care
APTA	Asia Pacific Trade Agreement
ARI	Acute Respiratory Track Infection
BB	Bangladesh Bank
BBS	Bangladesh Bureau of Statistics
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCC	Bangladesh Computer Council
BCM	Billion Cubic Meter
BDHS	Bangladesh Household Survey
BG	Broad Gauge
BIMSTEC	Bay of Bengal Initiative for Multi-sectoral Technical and Economic Cooperation
BIWTA	Bangladesh Inland Water Transport Authority
BJMS	Bangladesh Jatiyo Mohila Sangstha
BJRI	Bangladesh Jute Research Institute
BMD	Bangladesh Meteorological Department
BPFA	Beijing Platform of Action
BPC	Bangladesh Petroleum Corporation
BPO	Business Process Outsourcing
BR	Bangladesh Railway
BRAC	Bangladesh Rural Advancement Centre
BRDB	Bangladesh Rural Development Board
BRT	Bus Rapid Transport
BSIC	Bangladesh Standard Industrial Classification
BTCL	Bangladesh Telephone Company Limited
BSTI	Bangladesh Standards and Testing Institution
CAG	Comptroller and Audit General
CBAs	Collective Bargaining Agents
CBN	Costs of Basic Need
CDD	Calcium Deficiency Disorders
CDM	Clean Development Mechanism
CEDAW	Convention on the Elimination of all forms of Discrimination against Women
cft	Cubic Feet
CFS	Country Freight Service
CHW	Community Health Workers
CNG	Compressed Natural Gas
CPP	Cyclone Preparedness Programme
CPR	Contraceptive Prevalence Rate
CSR	Cyclone Shelter Management Information System
CYSMIS	Corporate Social Responsibility
DCI	Daily Calorie Intake
DEMU	Diesel Electric Multiple Unit
DFQF	Duty-free Quota-free
DHMU	Diesel Hydraulic Multiple Unit
DoE	Department of Environment
DRO	Disaster Relief Operation
DRR	Disaster Risk Reduction
ECA	Environment Conservation Act
ECE	Early Childhood Education
ECNEC	Executive Committee of National Economic Council
ECR	Environment Conservation Rules
EMS	Express Mail Service
EU	European Union

FA	Field Administration
FDI	Foreign Direct Investment
FFWC	Flood Forecasting and Warning Centre
FP	Family Planning
FWC	Family Welfare Centre
FY-2009	Fiscal Year 2009
GATT	General Agreement on Trade in Services
GBM	Ganges-Brahmaputra-Meghna
GDA	Ganges Dependent Area
GDP	Gross Domestic Product
GEP	Guaranteed Express Service
GHG	Green House Gases
GNI	Gross National Income
GNP	Gross National Product
GOB	Government of Bangladesh
GO	Government Organisation
GSP	General System of Preference
GWH	Giga Watt Per Hour
HCR	Head Count Ratio
HDI	Human Development Index
HIV	Human Immune Virus
HSC	Higher Secondary Certificate
HYV	High Yielding Varieties
ICD	Inland Container Depot
ICT	Information and Communication Technology
ICZM	Integrated Coastal Zone Management
ID	Iron Deficiency
IDA	Iron Deficiency Anaemia
IDD	Iodine Deficiency Disorders
IMED	Implementation Monitoring and Evaluation Division
IMR	Infant Mortality Rate
IMTP	Integrated Multi-modal Transport Policy
IPCC	Intergovernmental Panel on Climate Change
IPO	Initial Public Officers
IPP	Independent Power producers
IRLP	Indian River Linking Project
ISP	Internet Service Providers
IT	Information Technology
IWRM	Integrated Water Resources Management
IWT	Inland Water Transport
IWTA	Inland Water Transport Authority
kcal	kilo calories
kg/d	Kilogram Per Day
KSS	Krishi Samabay Samity
kwh	Kilo watt hour
LDC	Least Development Country
LGED	Local Government Engineering Department
LGD	Local Government Division
LGI	Local Government Institutions
LMI	Lower Middle Income
LNG	Liquefied Natural Gas
LOB	Lines of Business
LPG	Liquefied Petroleum Gases
MDG	Millennium Development Goal
MFI	Micro-Financing Institution
MG	Meter Gauge
MMcft	Million cubic feet
MP	Member of Parliament
MPO	Money Payment Order
MW	Mega watt

NAFTA	North Atlantic Free Trade Agreement
NAMA	Non-Agricultural Market Access
NEC	National Economic Council
NES	North Eastern States of India
NFE	Non-Formal Education
NGO	Non Government Organization
NLTP	National Land Transport Policy
NRR	Net Reproduction Rate
NWMP	National Water Management Plan
OMS	Open Market Sales
OPP	Outline of Perspective Plan
PAC	Public Accounts Committee
PC	Planning Commission
PDB	Power Development Board
PEM	Protein-energy Malnutrition
PERC	Public Expenditure Review Commission
PFDS	Public Food Distribution System
PIL	Public interest litigations
PKSF	Palli Karma Shahayak Foundation
PMO	Prime Minister's Office
PNC	Post Natal Care
POL	Petroleum Oil and Lubricant
PPP	Public – Private Partnership
PPMO	Perspective Plan Management Office
PRSP	Poverty Reduction Strategy Paper
PSMP	Power System Master Plan
PSRRC	Pay Services and Regulatory Reforms Commission
PTA	Preferential Trade Agreements
QRs	Quantity Restrictions
R&D	Research and Development
RDRS	Rangpur-Dinajpur Rural Service
RHD	Roads and Highways Department
RMP	Road Master Plan
RMG	Readymade Garments
RNFA	Rural Non Farm Activities
RoB	Rules of Business
RoO	Rules of Origin
RPP	Rental Power Plants
RRC	Regulatory Reforms Commission
SAARC	South Asian Association for Regional Cooperation
SAFTA	South Asia Free Trade Agreement
SBA	Skilled Birth Attendant
SEZs	Special Economic Zones
SFDF	Small Farmers' Development Foundation
SME	Small Medium Enterprise
SPARRSO	Space Research and Remote Sensing Organisation
SPP	Small Power Plants
SPS	Sanitary and Phytosanitary
S&T	Science and Technology
SRI	System of Rice Intensification
SSC	Secondary School Certificate
STD	Sexually Transmitted Disease
STEP	Science and Technology Entrepreneur Park
STP	Strategic Transport Plan
TAR	Trans Asian railway
TB	Tuberculosis
TBA	Traditional Birth Attendants
Tcf	Trillion Cubic Feet
TBT	Technical Barriers to Trade
TFR	Total Fertility Rate

TV	Television
TVET	Technical and Vocational Education and Training
U.S. \$	United States Dollar
U5MR	Under-Five Mortality Rate
UHC	Upazila Health Complex
UMI	Upper Middle Income
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNO	Upazila Nirbahi Officer
USA	United States of America
USF	Universal Service Fund
VCF	Venture Capital Fund
VAID	Village Agriculture and Industrial Development
VAT	Value Added Tax
VGDP	Vulnerable Group Development
VGf	Vulnerable Group Feeding
VOC	Vocational
VOIP	Voice Over Internet Protocol
VSAT	Very Small Aperture Terminals
VTE	Vocational and Technical Education
WARPO	Water Resources Planning Organization
WASA	Water Supply and Sewerage Authority
WHO	World Health Organization
WTO	World Trade Organization
WID	Women in Development
WiMax	Worldwide Interoperability for Microwave Access
YGM	Yield Gap Minimization

PREAMBLE

I. The Setting

Bangladesh has a wealth of experience in development planning having had formulated and implemented several medium term and short term development plans. Development is an integrated and a continuous process needing long term perspective. The Planning Commission, in this context, issued in 1979 a concept paper entitled “Preliminary Thoughts on a Perspective Plan of Bangladesh, 1980-2000” and another paper in 1983 named “Thoughts about Perspective Plan”. Also a document called “Participatory Perspective Plan of Bangladesh (1995-2010) was prepared in July 1995 but never approved by the government.

This continuum “Outline Perspective Plan of Bangladesh (2010-2021): Making Vision 2021 A Reality” is a strategic articulation of the development vision, mission, goals and objectives towards the Digital Sonar Bangla in 2021. It specifies the key milestones along the way and highlights major intents around strategic architecture, resources, competencies, and capacities. Eradication of poverty, inequality, and deprivation is central to this Perspective Plan. The plan will be implemented through the Sixth Five Year Plan (2011-2015) and the Seventh Five Year Plan (2016-2020) which will seek to make the best choices amongst the options, work out costs and operational details as well as institutional structures and methods execution, supervision, monitoring, and evaluation.

II. The Development Perspective

The Constitution of the People’s Republic of Bangladesh, particularly the Articles concerning people’s rights and provision, and Vision 2021 form the cornerstone of this Perspective Plan. The strategic document has been formulated in consultation at the national, divisional, district levels with people from different walks of life including *kishan-kishanis*, labourers, ethnic people and other marginalized and disadvantaged sections of the population, civil society members, administrators and policy makers, public and private enterprises, NGOs, and other interest groups, thereby making the document a participatory one.

Given that emerging realities of globalization are changing the pattern of global economic relations, this Plan aims at turning the unfolding scenario into national advantages towards building a sustainable future. Indeed, the resolve is to transform Bangladesh into a middle income in real terms as well as a high HDI country by 2021, the Golden Jubilee Year of national independence. For achieving such a significant status, much harder effort would be required to ensure that every citizen has the opportunity to fully and positively contribute in the economy and society and equitably benefit from the results achieved. Levels of poverty would have to be brought down significantly by increasing income and asset ownership as well as higher access to food, nutrition, education services, healthcare, gender equality, and creation of opportunities. Social discrimination, environmental degradation, physical insecurity, and socio-economic-cultural vulnerability must go.

III. The Approach

The approach adopted in the Perspective Plan is multi-dimensional and participatory. Human and cultural traits become equal partners with economic and social compulsions. An environment of forward and backward linkages and all round interactions would enable the construction of a development pathway for a prosperous, liberal democratic, non-communal, progressive nation with food and energy security ensuring making for strides in human and infrastructure development. Corruption free good governance will provide the basis for a prudent macroeconomic framework for ensuing growth with equity in which micro, small and medium enterprise strategy will provide a vital link with a vastly diversified industrial sector

The objectives of the Perspective Plan in outline for a *Transformed Bangladesh* by 2021 are:

- Elimination of illiteracy as soon as possible after 2014.
- Attainment of 100 percent enrolment with gender parity and specific steps in addressing the dropout problem, particularly of the girl children.
- Expansion and diversification of the industrial sector for enlarging the share of the secondary/industrial sector to 35 per cent of GDP and for employment generation.
- Reduction of unemployment rate to 15 percent.
- Decrease in the number of people below poverty line to 25 million i.e. to 15 percent.
- Ensure per capita energy consumption rising to 600 kwh.
- Raising per capita income to US \$ 2000
- Strengthening information technology towards a digital Bangladesh.
- Preservation, conservation, and restoration of all the historical monument/mass graves of martyred war veterans.
- Protection and enhancement of the environment, effectively meeting the challenges arising from the intensifying climate change and addressing other environmental degradation issues.

IV. Current State and Evolving Challenges

Bangladesh has made good progress in major economic and social arena, particularly since the restoration of democracy, despite several challenges at home and externally including the adverse impact of global financial meltdown and recession, energy price hikes and the adverse impacts of climate change. Table 1.1 shows that Bangladesh still has a long journey, replete with significant challenges, to navigate. A number of social indicators are weak, such as TFR, maternal mortality, CPR, child nutrition, state of persons with disability and autism and the indigenous people. Experience in recent times, however, points to the prospect of much faster progress, provided the areas of demonstrated success are further developed and those of the persistent weaknesses are vigorously redressed. Increased globalization of markets and capital movement, unprecedented knowledge creation and technological advancement have opened new vistas for rapid economic growth around the world, including Bangladesh. The country can achieve its development goals by a strong political will forging national consensus on major policy issues which will ensure a congenial environment for development and for effective utilization of its most valuable assets, a pool of hard working, capable, and dexterous people.

Table 1: Relative Position of Bangladesh in Selected Development Parameters

Items	Bangladesh	LMI countries	UMI countries
GNI per capita (\$)	600*	1,000	3,700
Unemployment rate (%)	26	-	-
Poverty level	40	12	13
Income Distribution (Gini coefficient)	0.46	0.27	0.32
Investment GDP ratio (%)	24	35	40
Agricultural value added per worker (\$)	338	513	2,800
Industrialization			
Manufacturing value added as %GDP Base	17 narrow	24 diversified	31 highly diversified
Export			
Export base	narrow	diversified	highly diversified
Kwan's Specialization Index			
Light Manufacturing	0.17	0.70	0.80
Capital goods	-0.09	-0.50	+0.70
Child malnutrition (%)	39	30	6
Adult literacy (%)			
Male	59	78	89
Female	48	66	87
Net enrolment (%)			
Primary	91	90	94
Secondary	44	65	80
Infant mortality (per 1,000 live births)	47	8	7
Maternal mortality (per 1,000 live births)	570	240	---
Paved Road (%)	10	48	80
Per capita electricity consumption (KWH)	146	685	1,677
Mobile Subscribe (per 1,000 population)	22	28	54
Law and Order scale=1~5	1	3	3

Note: The data relates mostly to 2007. LMI = lower middle income; UMI = upper middle. Per capita income of about \$1,000 and \$3,700 are respectively the threshold levels for LMI and UMI countries. For Kwan's index, -1 and +1 implies no specialization and complete specialization respectively.

*At present, the per capita national income for FY 2008-09 is 690\$

V. Structure of the Document

Chapter 1 articulates the vision and the development model adopted in the Perspective Plan and defines the goals that will make Vision 2021 A Reality. The chapter also sets key milestones and targets in the Vision 2021 process. It assesses the implementation challenges and identifies the necessary steps for successful execution and monitoring. This is followed by the development priority areas, arising out of the vision and the aspirations of the people, to guide the national agenda towards Vision 2021. Thus chapters 2 to 12 set the foundation for the aspirations of the people by assessing the global and national trends impacting on these priorities and major strategies to be adopted to attain the goals of the Perspective Plan.

Chapter 1

THE VISION AND THE DEVELOPMENT MODEL

The vision is to build Bangladesh into a resilient, productive, innovative, and prosperous nation with a caring society consisting of healthy, happy, and well-educated people. It is built on the enduring attributes of self-reliance, respect, tolerance, equity, and integrity. In line with constitutional obligations and international human rights commitments, society in 2021 shall be one in which (i) every citizen has equal opportunities to achieve his/her fullest potential; (ii) all citizens enjoy a quality of life commensurate with the national development stage where quality health care and adequate nutrition are assured for all; (iii) all citizens are assured of a modern, sound, and relevant education tailored to meet the human resource needs of a modern, progressive, and technologically advancing nation; (iv) sustainable development is ensured, along with optimal use of all resources; (v) there is respect for the principles of democracy, rule of law, and human rights, ensuring gender equality, the rights of indigenous populations and of all the other disadvantaged people including persons with disability and autism; and (vii) the diversity and creativity of all people are valued and nurtured.

1.1 The Vision for National Development

The overarching vision of the Perspective Plan is successful national development. That encompasses all aspects of economic, social, cultural, political, and other areas of development so that a high quality of life of all citizens can be ensured. The vision embodies a shared view of all citizens and a dream supported by will and action to transform it into reality. For Bangladesh, people are the real source of its strength. The priority is to uphold the rights of all people to live in dignity in an environment where all are empowered to promote individual, community, and national development.

The Perspective Plan adopts the Vision 2021 in building a happy and prosperous nation. This is all the more significant as 2021 also marks the Golden Jubilee of Bangladesh's independence. The major milestones will include the achievement of as many as possible of the UN Millennium Development Goals by 2015.

Vision 2021 envisages that by 2021, Bangladesh will reach a trajectory of high-performing growth supported by advanced and innovative technology with prices of commodities stabilized, income and human poverty brought to a minimum, health and education for all secured and capacity building combined with creativity enhanced, social justice established, interpersonal and regional income disparity reduced, all forms of discrimination eliminated, participatory democracy firmly rooted, and a capacity to tackle the adverse effects of climate change achieved. Information and communication technology will, by that time, also take the country to new heights of excellence, bringing a new 'Digital Bangladesh' identity.

Over time, the people of Bangladesh have shown high resilience against unfavourable odds (including, not least, recurrent floods and natural disasters) and proved themselves as successful innovators with a bias for proactive action that brings successful outcomes from innate creativity. The Plan will work to build a society characterized by highly productive, self-reliant, self-respecting and confident people who are driven by a value system based on the country's tradition and

culture, empowered by formal and informal learning systems, and enriched by universal access to information and communication technology.

Box 1

Some Key Targets based on Vision 2021

- Secure and sustain an annual rate of GDP growth of 8 per cent by 2013, which will increase to 10 per cent from 2017.
- Bring down the proportion of disadvantaged people living below the poverty line to 25 million, i.e. 15 per cent by 2021.
- Ensure a minimum of 2,122 k.cal/person/day of food for all poor people and standard nutritional food to at least 85 per cent of the population by 2021.
- Ensure 100 per cent net enrolment at primary level as soon as possible after 2010, provide free tuition to degree level as soon as possible after 2013, attain full literacy as soon as possible after 2014, and ensure that Bangladesh is known as a country of educated people with skills in information technology.
- Achieve self sufficiency in food by 2012.
- Ensure living accommodation for the entire population as soon as possible after 2015, supply of pure drinking water for the entire population as soon as possible after 2011, and bring each house under hygienic sanitation by 2013.
- Eliminate all contagious diseases and increase life expectancy to 70 years by 2021.
- Reduce maternal mortality to 1.5 per cent, raise the use of birth control methods to 80 per cent, and bring down infant mortality to 15 per thousand live births by 2021.
- Change the sectoral composition of output with the shares of agriculture (primary), industry (secondary), and services (tertiary) standing at 15 per cent, 40 per cent, and 45 per cent respectively in 2021.
- Reduce the unemployment rate to 15 per cent; change the shares of agriculture, industry, and services in employment to 30 per cent, 25 per cent, and 45 per cent respectively in 2021.
- Generate 8,500 megawatts of electricity by 2013, which will increase to 11,500 megawatts in 2015, and make provisions to meet the expected demand for power of 20,000 megawatts in 2021.

The Plan envisages that every member of society will enjoy a standard of living comparable to those of middle income and high HDI countries, with access to quality education and healthcare regardless of socioeconomic standings, religion, or gender. Poverty will be eradicated and people will live in communities where benefits will extend beyond the basic necessities of food, clothing, and shelter to ensure creative and fulfilling lives.

The role of the public sector will be to provide infrastructure and basic public goods and create an enabling environment for the private sector to act as the engine of economic growth. The government will be service-driven through cost-effective public sector delivery systems and social services fully enabled by adoption of modern technology. Governance will be guided by effective political and legislative institutions, protection of human rights, transparency and accountability in the establishment and enforcement of the rule of law, ethical conduct, value-focused decision making, and timely and efficient resource allocation. The government will listen to and provide feedback to people through e-governance and public forums, among other media. It will function with the highest standards of public accountability, participation, consistency, and integrity. Such governance standards will provide the context for the operation of all public and private sector institutions.

The private sector will develop globally competitive enterprises. They will deliver goods and services that meet domestic demand efficiently and capture a rising share of exports in the global market. The private sector will be empowered by a strong spirit of entrepreneurship and supported by risk-tolerant financial institutions and legal systems that actively encourage business start-ups. The

development of micro, small, and medium enterprises will encourage women entrepreneurs. The private sector will also develop social responsibility to play a positive role in social and national development.

Both the public and private sectors will collaborate effectively and efficiently through public private partnerships (PPP) and other innovative models to deliver infrastructure, utility and other services in an environment-friendly manner. Bangladesh will emerge as a country with sustainable and inclusive economic growth. It will become a country that has diversified industrial and technologically advanced service sector activities based on a strong foundation of agriculture. The economy and national development will be effectively managed, with the government ensuring macroeconomic stability and creating right incentives, and the private sector providing the direction and impetus for new investments to raise the level of outputs and employment.

1.2 A Resilient Democratic Nation

Born from the great Liberation War of 1971, Bangladesh is a non-communal, progressive, democratic state that has worked to establish an economy and society free of inequality, and to nurture a culture of democracy and respect for human rights for all fostered by patriotism in all areas of social existence.

Along with a tolerant democracy, the aspiration is for a more caring society based on a system of values rooted in the culture and traditions of Bangladesh. The country's value system will develop as it progresses, and the values will translate from collective to individual perspectives creating a collective drive to work together towards national development. Bangladesh's heritage, rich in content and diversity, shall have a place in our present and be the anchor for the country's ambitions.

Promoting democratic culture

Nurturing political maturity and a culture of democracy will enable the country to gain greater socio-economic benefits during the Plan period. Political maturity will come through greater tolerance and cooperation in politics through mutual respect and trust. The election process will be made still more credible and effective. Parliament shall be turned into the centre of all power and decision making. Members of Parliament will be responsible for law making and ensuring governmental accountability to the people. The Parliamentary Standing Committees will be made more effective.

Right to information and free media

The free flow of information on the government's financial transactions and records, except those which involve national security and criminal investigation, will be made available under the Right to Information Act 2009. This will require all public officials, including the elected, to provide annual information on their state of income and wealth. This will be an important component of Digital Bangladesh under the Vision 2021. Further independence of the media, both electronic and print, shall be ensured.

Independence of the judiciary

The separation of the judiciary from the executive has already been achieved. What remains to be done is to ensure the full complement of judges at all levels, separate investigation and prosecuting wings to enable the judiciary to carry out their duties without interference. Independence of the judiciary will be supplemented by monitoring and supervising the judicial process. Improved training of the lower judiciary and further legal education for lawyers will increase the judiciary's efficiency. To expedite justice in rural areas, alternative dispute resolution will be brought under the supervision

of judicial magistrates. Respected local civil society members will be called upon to contribute to conflict resolution in rural areas through negotiation in pre-trial courts.

1.3 Promoting Gender Balance

In a continued endeavour to ensure gender balance as enshrined in the Constitution's Fundamental Rights and Principles for Administration of the State chapters, the government introduced a separate quota for women in Parliament. The quota system for women also applies to public services, and the Bangladesh *Jatiyo Moheela Sangstha* was formed. Other similar measures were introduced to empower and mainstream women in national life. Institutionalization of gender responsive planning and a budget promoting gender balance is also in progress. The National Policy for Women's Advancement 1997 provides for the elimination of all forms of discrimination against women, equal rights of inheritance to property and equal partnership in development.

The Plan will give women their rightful share in skills development training both at home and abroad, and will improve professional excellence. The CEDAW Charter will be ratified without reservation. All laws relating to gender inequality will be reviewed to ensure gender sensitive good governance, security at home and in the workplace, the rule of law, transparency and accountability in all public and private organizations in an inclusive society.

The Plan will provide incentives for women to pursue vocational higher, secondary and tertiary education and to obtain the necessary training that allows them to compete on equal terms in the job market and also become entrepreneurs. The availability of institutional collateral free credit to women entrepreneur for setting SMEs could be an important step for encouraging women in this venture. A separate bank for Women may be established for supporting women entrepreneurs and traders. Special consideration will be given to appointing women candidates to key and statutory bodies such as the PSC, SEC, Election Commission, ACC, BTRC, PERC, Bangladesh Bank, UGC, the higher judiciary and other strategically important sectors and positions. One-third of nomination of candidates to all national and local level elections may be reserved by all the parties contesting the elections. And one-third of the office bearers of all registered political parties will have to be filled by women.

The feasibility of incorporating into GDP calculations the value added by women in the household, kitchen garden and similar other activities will be examined by experts. Due attention will be given to enhancing the economic participation rate of women from 29 per cent to at least 40 per cent by 2021.

1.4 The Model for Achieving Middle Income and high HDI Country Status

If Bangladesh is to achieve middle income country and high HDI status by 2021, it will have to address the multi-faceted and complex concerns of development, involving economic factors as well as social, cultural, and political aspects. There are changing dynamics in the interactions between these factors that also need to be taken into account in assessing the outcomes.

For the sake of simplicity, the basic assumption adopted in the model is that the level of economic well-being, as measured by national income per capita, is a prerequisite for development; and that the level of per capita income is correlated with several key non-economic factors which define middle income and high HDI country status. The model is supported by a technical framework capable of analyzing poverty, distribution, and the social implications of the income growth

scenario¹ These results are used to define the growth path that will lead Bangladesh to a middle income and high HDI country by 2021. Development priorities are sharpened further by these considerations and drivers of change.

1.5 Development Priorities

Development priorities are distilled from the vision statement and therefore have close links with where Bangladesh will be in the year 2021. The goal is to promote an equitable society as a basis for social and political stability and the achievement of national unity. There will be poverty eradication, gender equality, balanced regional development, and an inclusive society with workers' rights and responsibilities firmly established.

The path to poverty reduction will promote broad-based growth and actions in distributive justice to reduce inequality in the distribution of income and wealth. An employment generating linkage through micro, small and medium enterprise will create a vehicle for income generation-cum-poverty eradication – not just for poor people, but also those with disabilities and autism as well as indigenous people. The provision of universal socio-economic-cultural safety nets, or social protection, including targeted programmes will be a part of the government policy to ensure an equitable society as the country climbs the ladder to higher economic growth.

The equal rights of women and men, and measures to bring advancement to society's left-behind groups are also components of the equity agenda. Policies will explicitly recognize that women's poverty has different dimensions and is generated through complex processes that need specific actions. Poverty reduction of women requires holistic strategies for gender equality, which includes safety net programmes for the female-headed households along with appropriate skill training supported by micro-credit. A women-friendly health system is required that can effectively cater for the differential needs of women.

The Perspective Plan aims to create a more inclusive and equitable society characterized by human rights and equal opportunity for all. It will work to ensure that every person, regardless of gender, age, race, class, caste, ethnicity, religion, or geographical location, can enjoy equal opportunity and rights, making development a process that actively includes all the people that have been excluded to date. In order to achieve the desired society, cultural, religious, and ethnic diversity has to be promoted as national heritage through pursuance of policies for cohesion and inclusion of the ethnic, religious, and cultural minorities into a national and social force. The civil society will be encouraged to launch cultural movement for integrating the Dalits, Harijion, Antaja, tea garden workers, indigenous, people with disability and autism, and other socially disadvantaged and stigmatized groups into the mainstream of the society. All forms of discrimination against the socially excluded groups will be eliminated and their human rights and citizenship rights be established. The full implementation of the 1997 Chittagong Hill Tracts, the Bangladesh Disability Welfare Act and making Land Commission effective will be a move in this direction.

The **development priorities** of the Perspective Plan are:

¹ The technical framework consists of four linked models: (i) a macroeconomic framework containing five accounts delineating the economy to generate a consistent macroeconomic outlook over the Plan period; (ii) a dynamic computable general equilibrium model into which the key outcomes of the macroeconomic framework are fed to allow the sectoral implications to be calculated; (iii) an employment satellite matrix in which sectoral value additions/outputs are linked to calculate employment impacts; and (iv) a distribution and poverty module in which household income, consumption, and relevant information from the above models are linked to assess poverty situations and distributional implications.

- Ensuring effective governance.
- Promoting an innovative people for digital Bangladesh.
- Creating a caring society.
- Addressing globalization and regional cooperation challenges.
- Ensuring broad-based growth and food security.
- Providing energy security for development and welfare.
- Building a sound infrastructure.
- Mitigating the impacts of climate change.

These thematic approaches will shape and form the foundation on which strategies are developed for the overarching vision that will guide policy development, and place the strategies in appropriate relational contexts.

While development priorities are elaborated in the following chapters, it is clear that the nation needs to harness all its resources and skills, and ensure their prudent use in the strategy's implementation. It is also important to recognize that an integrated approach will be necessary to move forward in each priority area, because these crosscutting areas are underpinned by culture, diversity, and physical differences. The combined efforts of public and private sectors will be needed to create the critical mass necessary to support the development efforts.

Effective governance is the strongest means to achieving the goals of the Perspective Plan. The administration of justice, good governance, effective institutional structures for development, law administration and legal affairs, national security, and public safety are essential for fair contracts, dispute resolution, promotion of entrepreneurship, and to encourage businesses and individuals to take risks. Without upholding rights and adhering to basic tenets of justice, the poor and disadvantaged groups will remain unable to take economic and social opportunities for economic growth. Effective governance will employ public resources efficiently in activities with high social returns, will strengthen public institutions, minimize corruption, terrorism, and extortion, encourage citizens to develop greater respect for the authority and rule of law, and stimulate the private sector to take socially responsive decisions

An innovative people will be the foundation of the envisioned society. These individuals will acquire appropriate knowledge, skills, and abilities through a strong learning system consisting of pre-primary, primary, secondary, and tertiary education; skills development and training; and application of research, science, technology, and innovation. Innovation will be fostered in education and at work; and the innovative people will value the dignity of work, accept risk, and will emerge as lifelong learners. They will identify problems and seek solutions, thereby improving the economy's competitiveness. Creative citizens will underpin Bangladesh's journey to middle income and high HDI country status by 2021.

The creation of this innovative people will demand vast information technology efforts and computer technology during the Perspective Plan period. ICT will be the vehicle through which a **Digital Bangladesh** will be created. This will raise efficiency and productivity across all sectors of the economy, including agriculture, health, education, training, and e-governance, and will help to bring greater transparency in governance.

A caring society will nurture the seeds of progression and patriotism. It will compel individuals, communities, and institutions to move forward to stamp out poverty, discrimination, economic and social marginalization, disease and poor health, and sub-standard living conditions. This will create new possibilities and take advantage of existing ones for the communities to work collaboratively with trust, goodwill, integrity, and civic pride so that none is left behind. Nurturing such a society requires actions in the related areas of health, housing, labour and social security, gender and

development, youth and culture, sports and recreation, sustainable communities, and social services.

Addressing globalization and regional cooperation challenges are important for Bangladesh to sustain increases in the quality of life through productivity and income growth. Instituting a prudent macroeconomic policy framework conducive to achieving high economic growth with stability; ensuring the availability of, and access to, appropriate financial services and entrepreneurship in agriculture, industry and services; promoting international relations, regional and sub-regional cooperation, and trade; and expanding tourism are among the areas where facilitating policies will create new opportunities and promote innovation. That in turn will help the country move to a higher productivity and investment regime.

The Perspective Plan envisages a far more **dynamic industrial sector**, creating an export environment that is broad-based, skills-intensive, and competitive. There is urgency in the need to expand external resources – particularly in raising remittances – and that will require the application of technology-based and user-friendly systems for remitting money, providing good skills training for existing and emerging markets, and aggressive bilateral negotiations for outbound migrant workers. Addressing globalization and regional cooperation issues will entail negotiations that give Bangladesh better access to global and regional markets. Effective engagement in multilateral trade liberalization is important, and offers real opportunities for Bangladesh to take advantage of its unique geographical location.

Broad-based growth and food security will provide the basis for raising incomes and creating employment opportunities. The employment intensity and broad-based nature of growth will play a pivotal role in reducing poverty and raising the living standards of poor and disadvantaged people. The quality of economic growth will be enhanced by creating demand for labour supplied by poor and disadvantaged people, and by expanding the market for their products and services. It will also serve to raise their productivity and will be key to reducing income inequalities.

Addressing economic disparities between regions, and between urban and rural areas, will receive priority attention through policies that promote dispersion of industries and other economic activities for which regional considerations will be built into the national development framework. To ensure food security, economic and social access to food will be assured, with particular attention given to addressing the multiple food insecurities that women, disabled, and girl children face. The government will support the participation of small-scale food producers in a new green revolution that gives high priority to revitalizing small-scale food production based on ecologically viable systems. Climate change holds the potential to radically alter agro-ecosystems in Bangladesh. Along with encouraging adaptation to climate change, supportive measures will be introduced to strengthen regional and national mechanisms for scientific assessment, forecasting and information sharing, while building national and local capacities for greater ecological literacy, agro-ecosystem monitoring, and for assessing and managing risks.

Energy security will be one of the critical elements for realizing the Perspective Plan's vision. The Plan aims to develop an integrated and developed energy sector with a diversified fuel mix that will be the key driver of a sustainable local and national economy, while attaining global competitiveness in all sectors by 2021. The Perspective Plan will ensure prompt and timely decisions to steadily encourage the private sector within the energy sector; ensure transparent governance of energy-related public sector institutions; enhance the development of human capital; support development of the energy sector through physical and systemic structures; contribute to the protection and enhancement of the natural environment. It will also promote renewable energy, such as solar and biogas; and ensure access to power and energy to all.

Sound infrastructure is essential to realizing the Vision. The efficient and safe movement of people and goods needs well-built, efficiently operated, and maintained physical infrastructure and transportation systems, along with reliable and affordable supplies of water, electricity and power,

telecommunications, postal and waste management services. In addition to well-planned urbanization, attention will be given to multi-modal transport, integration of roads and highways, trains, water transport, rural transport and airports. Railways will receive much higher attention as a means of passenger and goods transportation throughout the country.

Mitigating the impacts of climate change is crucial for sustainable development. Environment and climate change concerns relate to floods, tropical cyclones, drought, desertification, water supply and salinity management, deforestation, water and air pollution, and contamination of water by arsenic. Environmental degradation through the unplanned expansion of cities and industries is a national challenge. Climate change might increase rainfall and consequent increased run-off, thereby increasing the risks of flooding and drainage congestion – especially as Bangladesh has a long coastline and flood terrain making it highly susceptible to climate change. Disaster management is intimately connected to the environment and climate change. This requires mitigation, preparedness, response, and recovery.

1.6 Making Vision 2021 A Reality

Generating the Will and Skill: The implementation of the Perspective Plan envisages the full commitment of will, skill, and resources from all stakeholders to developing the nation into a middle income country by 2021. The government is required to make long-term thinking a central element of the decision making process and service culture. The government cannot achieve the Vision alone. It is a collective effort in which the private sector, civil society, and all other stakeholders will share responsibility to reshape the nation's future. The consultative process in formulating the Plan must continue throughout the implementation since Vision 2021 is not a destination in itself but a journey. The Plan no doubt inspires great visions but the challenge is not to let it fall short of expectations due to implementation failures.

Institutionalizing Plan Implementation: The preparation of the Perspective Plan is only the first step along the challenging road to "Making The Vision 2021 A Reality". Effective and efficient execution of the Plan is the key, its success will be judged by progress made against the goals, and targets set in the Plan. This Plan presents the broad framework to leave considerable latitude for the Sixth Five Year Plan (2011-2015) and the Seventh Five Year Plan (2016-2020) to work out operational details of how the country should move forward.

The execution design of the Perspective Plan has to be unique. In recognition of the importance and challenge of the task, a Perspective Plan Management Office (PPMO) at the Planning Commission may be established to lead, guide, and coordinate the execution of the Plan. An Independent Vision 2021 Council may be created to continuously refine the Vision 2021 and the Perspective Plan and track progress in an objective manner to meet the need for independent, continuous tracking of progress and feedback to inform policy formulation and decision making.

Chapter 2

ECONOMIC GROWTH AND CORRUPTION FREE GOOD GOVERNANCE

2.1 Institutional Basis of Governance

The Fundamental Principles of the Peoples' Republic of Bangladesh, as enshrined in Article 11 of the Constitution, are that the Republic shall be a democracy, in which fundamental human rights and freedom and respect for the dignity and worth, of a human person shall be guaranteed.

Only good governance involving peoples' participation can ensure the realization of the Constitution's democratic ideals. Good governance results from a cumulative input from free and fair elections, transparency, accountability through monitoring, separation and independence of judiciary, an effective parliament, an independent media, decentralization of power to a strengthened local government, equitable access to basic services, and quality education and health care. In such a state of governance, there are adequate safeguards against corruption.

The executive head of the government is the Prime Minister who is appointed by the titular head of the state (the President), but is accountable to Parliament. The executive functions of the state are arranged in a hierarchical pyramid with the Prime Minister at the apex of the line ministries and the departments at the base of the central government. The field administration consists of the divisions, districts, and upazilas manned by officials from the administrative, judicial, police, health, education, agriculture, food, population planning and other departments. Each ministry has a budget supported by the national budget. Budgetary resources are drawn from the revenue surplus and all other forms of national savings (including remittances from the nationals working abroad) very often supplemented by external assistance. Corporate and state owned enterprises (SOEs) perform the specifically assigned role of managing state utilities and the businesses of state enterprises. It is worth noting that through continued and steady liberalization, the market-based management of economic activities has the upper hand right now with the ownership of more than 80 per cent of the investment and assets in the corporate sector.

2.2 Development Governance

The Planning Commission and the National Economic Council are custodians of the national goals and priorities in development management. The Planning Commission is responsible for formulating development policy and the long-term Perspective Plan, the medium-term Five Year (sometimes Three-year) Plans and the Annual Development Programmes (ADP). This is done under the guidance of the Head of the Government chairing the Executive Committee of the National Economic Council (ECNEC), and in consultation with line ministries. The Planning Commission and the ECNEC also approve projects according to a financial limit scheme beyond the authority of the line ministry.

The monitoring and auditing functions of the financial transactions in the government are carried out by the office of the Comptroller and Auditor General (a constitutional position) under the guidance of Parliament's Public Accounts Committee. Similarly, the Implementation Monitoring and Evaluation Division (IMED) is charged with the functions of monitoring and evaluating progress,

or lack of progress, in development projects, except that not even its supervisory authority, the Planning Commission, enjoys any statutory or constitutional status. IMED's function must not be limited to undertaking evaluation of only the financial and physical progress of projects, but also carry out much needed impact assessments to generate 'lessons learnt'.

There is also considerable frustration among officials of the Bangladesh Civil Service (Economic) about inadequate strength, training facilities and opportunities for upward mobility. The status of the Planning Commission and its staff has certainly suffered a steady decline since the first government of the Republic.

2.3 The Civil Service

The civil service in Bangladesh is sometimes accused of lacking merit, a hard work ethic, responsibility, and responsiveness to the country's needs. At times, its integrity has also been questioned. These allegations may not always be true and must, in any event, be considered in the context of inadequate compensation, lack of adequate upward movement opportunities and declining status. The civil service has certainly faced significant constraints in its ability to attract the most meritorious daughters and sons of the soil to its fold. Vision 2021 addresses this need as follows:

Vision 2021 on Good Governance

Institutions of the State and Administration will be freed from partisan influence. The basis of appointment and promotion will be performance, commitment, efficiency, honesty and loyalty.

2.4 Local Governance

Vision 2021 envisages devolution of power, function, and finance to local government. This has been implemented partially, but only in urban local government. Local governance can bear fruit only in a non-command and liberal government environment. Sustainable human development must see the people driving development – the people must be the participants as well as the beneficiaries in planning development. Devolution of power, responsibility, and financial management to the upazila and other local government tiers are necessary. Recent moves towards district level budgeting are steps in the right direction. A gradual enlargement of the share of the ADP outlay by the upazila parishads in line with pre-determined principles will further strengthen the process. Of course, transparency and accountability will have to contain (if not eliminate) corruption in local government.

Vision 2021 on Local Government

Local government will be given due importance with a view to effecting radical change of the political system. Local government institutions will play a critical role in governance as well as in development programmes. Self-reliant local self-government institutions will be established at upazila and Zila levels.

2.5 The Private Sector and Civil Society

The private sector has been a key engine of growth and generation of financial resources. It has also, perhaps, been a victim of over regulation by government.

Civil society facilitates good governance, with NGOs leading the corps of civil society organizations. Advocacy groups take up causes of public interest. Public Interest Litigation has become a common phenomenon. The media has been very active, but partisan. As the process of wealth creation accelerates, private charities and philanthropies are slowly emerging. Moreover, there has been an increase in private charities and philanthropies led by the Bangladesh diaspora. Private businesses and corporations are increasingly embracing Corporate Social Responsibility (CSR).

2.6 Anti-Corruption Movement

Corruption and abuse of power impairs the governance process. Bribe payers and auditors are seldom mentioned in discussions about corruption. The Public Accounts Committee and CAG remain ineffective. Historically, anti-corruption units have essentially been bureaucratic bodies with doubtful efficacy. A lack of social and economic analysis of rising corruption impedes the battle to remove it. Rising prices without adequate rise in salaries and other compensation, increasing poverty, growing disparities, a concentration of too much power in the hands of government functionaries, and of economic power in the hands of a small number of profit seeking entrepreneurs, are among the factors contributing to increasing corruption and abuse of power.

Anti Corruption Movement: The Anti-Corruption Commission should function with constitutional guarantees for its powers, free of any constraint by the executive and lower judiciary. A range of effective incentives will be provided to the Commission to ensure their impartiality. Effective measures will also be taken to bring the corrupt to justice. A social revolution is necessary to curb corruption.

Accountability and Transparency: With Vision 2021, the country aspires to an accountable and transparent governance system, with the right to information firmly established. The government has already set up a high powered Right to Information Commission.

A Transparent Procurement System: A public procurement system, particularly for large purchases both at home and abroad, is widely seen as the single most important source of leakage of public funds. Reducing opportunities for corruption in procurement will enhance the effectiveness of public expenditure. The large sums that are provided in the development budgets could be brought under social scrutiny, especially in the floating and award of tenders for public infrastructures and donor financed projects. Public procurement should be free from endemic delays, lack of transparency and collusive practices of people in positions of power and influence, and cadres of the political parties. An e-procurement culture, or system of computerized tendering, should be able to deal with these issues of transparency in public procurement.

Ethics and Values: These must be inculcated in society, with educational and training institutions acting as the primary medium for their dissemination to young and future leaders.

An Effective OMBUDSMAN: The Bangladesh Constitution provides for the post of Ombudsman. This post should be filled and the incumbent provided full scope to function effectively and independently.

Law and Order: Effective law and order should be and will be a foundation for development. All pillars of the justice system will regain their credibility. Perceptions of corruption, inefficiency and wastage will disappear. Laws relating to commitments to international conventions and agreements, such as the Convention on the Elimination of all forms of Discrimination against Women, the Beijing Platform for Action, and the Convention on the Rights of the Child, will be implemented.

The Police force must be strengthened and so that it is able to regain confidence of the people. Police will maintain a working level of public order, preventing, detecting and investigating crime. The perception of police friendly or protective of the wealthy, and indifferent or contemptuous to the poor or the working class, must be changed. A system of gender sensitization training (covering violence against women issues and other laws to protect human rights) will be established for all legal and police officers. The concept of community police may be reinforced.

2.7 Towards Fast-Track Governance

(i) Agency Performance Ranking: A composite set of Agency Performance Indicators will be initiated for ministries and agencies to facilitate public disclosure of performance data for each and every agency. It will set a standard for performance, transparency and accountability and will be helpful tool in policy making.

(ii) Building Capacity for Policy Planning: A comprehensive capacity for economic and social development policy, one that is consistent and coherent, will be developed for both the public and the private sector. The policy will form an integral part of a macro policy framework as a basis for which development strategies and plan of action can be prepared with a home-grown perspective.

(iii) Developing Critical Institutional Capacity: Improvement in the policy planning capacity implies corresponding improvement of institutional capacities. The existing institutional arrangement for policy planning consists of: (a) Planning Commission, (b) Cabinet Division, (c) Finance Division (d) IMED, and Establishment Ministry. The Planning Commission must have a lead role in steering Vision 2021. The role of the Cabinet Division includes [i] overseeing the performance of other ministries, divisions and agencies by initiating civil service reform including regulatory reform and reform of the Rules of Business, and [ii] redesigning, and overhauling the field administration that links the field and the centre. The role of the Finance Division includes sharpening the role of CAG in the public accounts. The role of IMED arises with respect to [i] monitoring and evaluation of the public sector development projects included in the Annual Development Programme and [ii] policy formulation, coordination, monitoring and improvement of the public procurement process. And the role of the Ministry of Establishment includes [i] reform of the civil service, and [ii] providing training and career planning for a competent civil service.

(iv) Regulatory Reforms: Reform should be a continuous process. As society evolves, so does the need for newer reforms to reflect the changing environment. A permanent Pay, Services and Regulatory Reforms Commission (PSRRC) should be set up. The objectives of the PSRRC for the public sector should be (a) to reform the existing regulations in the service delivery system of ministries and departments, and the agencies they manage, (b) to facilitate citizens' access to government services, and (c) to keep the operation of the private sector and civil society within a transparent framework.

2.8 Targets and Strategies for Good Governance

Targets

- Develop a country specific governance measurement mechanism by 2012.
- Develop a composite set of Agency Performance Indicators for the Ministries by **2014**.

Strategies and Policies

As the continuing institutionalization and consolidation of democracy, Parliament should move to the centre of all national activities, including governance. The Treasury and the opposition will play their roles sincerely and participate actively in shared governance. A shadow government may be considered. More systemic democracy, including of party management, will become established. Party financing of campaign finances by the Treasury will be put in place.

As judiciary becomes ever more independent, so will the transparency and accountability of governance, with an active OMBUDSMAN, a non-partisan media and a civil society, which have the national interest as their supreme goal. Administrative reform of all services will be an ongoing process, with a permanent Pay and Services Commission, appointment by the President to all statutory positions on the basis of a recommendation of a constitutional search commission, and the indexing of public service compensation to inflation.

Good governance will nurture sustained and sustainable human development. It is also the best weapon with which to fight corruption.

Chapter 3

PROMOTING HUMAN DEVELOPMENT

Human development encompasses a vast range of challenges, from education for children of school going age, provision of a nutritious diet, eradicating epidemic diseases, ensuring good health for all, creation of employment opportunities for all citizens, and skills formation to training of the labour force for national and international employment. Secondary and tertiary educations are also an integral part of human development.

However, population growth can threaten development achievements. Bangladesh needs a new perspective on population planning that will not only set future population targets, but will also introduce convincing measures to reach those targets. Therefore, promoting human development entails three basic processes:

- Planning population (both containment and management) properly and converting them into human resources
- Promoting and sustaining health and nutrition, and
- Ensuring education for all.

3.1 Planning Population and Generating Human Capital

3.1.1 Introduction

Population and development go hand in hand. Since people in a society are both producers and consumers, a development process should consider demographics, i.e. a population's structure, composition, distribution, behaviour pattern, attitude, values, norms, beliefs, practices, and its whole lifestyle pattern.

The number of people, the speed of growth, the quality of life, the pressures people face are influenced by environmental, economic, political and social conditions. This is not a one way process. People influence these conditions by the decisions they take, and vice versa. Therefore, any development effort must take account of population parameters if economic growth and the welfare of society are to be sustained. Population issues should be at the centre of all developmental planning.

By 2021, there will be more Bangladeshis. They will be better educated, healthier and more prosperous than at any previous time. The scourge of famine, *monga*, which has plagued this part of the world for centuries, will have been eliminated. They will have strived hard to get more nutritious food including micronutrients while ensuring safety net against vulnerability.

3.1.2 Demographic Challenges

Although Bangladesh is the eighth most populous country in the world, with the highest population density and a low per capita income, the country's demographic and economic indicators have recorded considerable improvements. The contraceptive prevalence rate has risen; fertility and mortality rates have declined; per capita income has increased; the overall level of poverty has declined; the rate of school enrolment has increased; the proportion of the population living in urban areas has increased; to name but some. These changes are a result of some promising policies, strategies and interventions taken by the governments, either independently or in collaboration with international fora. Nevertheless, many challenges remain.

The total population has increased from 71 million to 150 million since independence. The TFR remained stagnant for almost a decade and the recent decline is very slow. Fertility is still playing major role in population growth. With the current rates of fertility and mortality, the population size is expected to be about 280 million before it stabilizes.

The dropout rate in contraceptive use is more than 50 per cent, while the unmet need is 18 per cent. There is a high regional disparity in the TFR and CPR. Male participation is very low. Maternal mortality and infant mortality rates are high even in comparison to other developing countries. Only 15 per cent of child births take place at health facilities, and just 18 per cent of births are delivered by the trained personnel.

The average female age at marriage is very low, despite the legal age of 18 for a woman to get married. The adolescent fertility rate is one of the highest in the world, with 60 per cent of adolescent girls becoming mothers before they reach 19.

The population aged over 60 years will reach staggering proportions by 2051. By 2021, there are expected to be around 14 million people aged over 60 – and that figure will reach nearly 30 million by the end of 2051. This indicates that Bangladesh is entering a new phase of rapid growth of elderly population, with all its associated challenges. Projections show that even after reaching replacement level fertility, the population will continue to get older.

The rural-urban migration rate has shown a sharp rise. The country's major cities are the principal recipients of in-migrants. The national rate of population movement is 4.5 per cent – and for Dhaka, it is 6 per cent. An unbridled influx of people from rural areas and the resultant unplanned urbanization poses a double challenge: reducing the sustainable economic growth potential for rural areas on the one hand, and creating hazards in urban areas and making cities more difficult to live in on the other. Slums account for more than 35 per cent of the population in all major Bangladeshi cities.

In a young population characterized by illiteracy, low status of women, malnutrition, unemployment and limited access to social and health services, there is every chance that inequality in the distribution of income will increase, which will bring a higher level of poverty.

3.1.3 Population Policy Targets and Strategies

Eradication of poverty demands the expeditious achievement of a replacement level of fertility rate. Therefore, the government's current major policy targets are to:

- Reduce TFR from 2.7 to 2.2.
- Increase CPR from 56% to 80%.
- Reduce unmet demand of eligible couples for FP supplies from 17.6% to 10%.
- Reduce discontinuation rate of contraceptive rate from 56.5% to 20%.
- Strengthen programme planning, monitoring, and co-ordination among government agencies on population policy.

However, the goal of achieving a TFR of 2.2 could be revised. With the current TFR of 2.7, the TFR for wanted fertility is 1.9. This suggests that if all the unmet need is met, the country already has a much lower TFR than the TFR (2.2) to be achieved by 2015. The TFR target should be no higher than 1.7 if a rapid arrest of population growth is to be achieved. However, a replacement level fertility does not mean no population growth. Achieving replacement level fertility by 2015 will add 2 million people every year because of the huge built-in momentum that exists with a large young population (38 per cent). To raise the CPR to 80 per cent, the nation does not have to wait until 2021. What is needed is a reduction in the drop-out rate. It is estimated that if all unmet need (18 per cent) is met, the CPR will rise to 74 per cent even in 2010-11. So targets of achieving replacement fertility could be set for 2013, rather than 2015, and for the TFR to reach 1.7 by 2021.

This could be achieved with a two-pronged attack on the issue. On the one side will be supply of contraceptive materials; and on the other will be an adequate emphasis on women's education and health care, women's employment and economic opportunities.

Strategies may include, but are not limited, to:

- Government may take responsibility for all educational expenses of the child from the couple having ONE child.
- Ensuring employment to the single child according to his/her qualifications in government/NGO/private organizations.
- Ensuring free government medical treatment to the single child until he/she reaches maturity.
- Introduction of social pension for the parents of a single child in case of need.
- Discriminate against parents of more than two children in terms of VGD/VGF or other safety net programmes.

A one child per couple policy has to be adopted as soon as possible. Incentives for voluntary permanent methods of birth control may be further strengthened. Population policy will include actions designed to promote the survival and healthy development of all children, improved health, education and socio-economic well being and empowerment of women, and for a better nutritional status for mothers and children, particularly the girl child.

An increase in the contraceptive prevalence rate has to be determinedly conducted through door-to-door service providers. This will be achieved by rejuvenating the Family Welfare Service, along with the strengthening of social development initiatives, such as female education, health services, later marriage, employment opportunities for girls, and social movement for the smaller family norm of one child per couple.

Advocacy should be strengthened for male participation in permanent and other methods of contraception. The CPR must be raised to 80 per cent to achieve a TFR of 2.2. A reduction in adolescent fertility has to be given top priority.

A demographic transformation is taking place in the context of other societal changes; the joint/extended large family, once seen as the source for providing security in old age and a kinship network, is being replaced by the smaller, nucleus family with no institutional safeguards to meet the needs of the elderly. The social safety net for the elderly should be strengthened, for both rural and urban areas.

3.1.4 Coordination and Monitoring

There appears to exist a relative lack of commitment to population management through converting the raw population into human capital. The amalgamation of the Ministry of Health and the Ministry of Family Planning in the eighties does not seem to have brought about an improvement in population management. In reality, the two wings of the sector, Health and FP, work separately and lack coordination, although many services have to be delivered jointly. A number of measures are needed to address this. First, the two wings should be separated to perform their tasks independently. Until that is done, coordination between the two at the field level must be drastically improved.

A strong coordination and monitoring body should be created and given greater authority and autonomy. The National Population Council, chaired by the Prime Minister, can be extended to the grassroots level, and include representatives from elected bodies, the local administration, social and political leadership, civil society and other stakeholders. This body will supervise and monitor the implementation of programmes.

3.2 Promoting and Sustaining Health

3.2.1 Challenges to Public Health Services

Over recent decades, Bangladesh has made substantial advancements in the health status of the population. Life expectancy at birth has increased. Maternal, infant and child mortality rates have declined. And immunization coverage has remained fairly high.

Despite these improvements, much still remains to be done to improve people's health condition. Serious health problems persist in Bangladesh. Poor nutrition represents a major health problem. Anaemia among women of child bearing age is extremely high. Diarrhoeal diseases are still a major killer – despite being easily treatable with known medical help. Communicable and poverty-related diseases that are preventable continue to remain among the top ten causes of mortality. Complications during pregnancy and childbirth are a leading cause of death and disability among women of reproductive age.

Skilled birth attendants are present at only one-fifth of all births. This figure is even lower in slums and tribal areas. More than 80 per cent of deliveries take place at home. Traditional birth attendants assist three-quarters of births in Bangladesh. Only 18 per cent of women receive post-natal care. The situation is even worse in the lowest quintile of the population.

Among those seeking care, the proportion of those choosing unqualified or traditional providers is relatively high (63 per cent). Furthermore, the proportion of sick people going to a public provider is significantly lower (14 per cent) than those going to private providers.

In Bangladesh, HIV incidence is low, both among sex workers and in other populations. However, the incidence rises dramatically among intravenous drug users. TB and malaria, along with the emerging scourge of arsenic poisoning, continue to pose significant risks to public health.

Non-communicable diseases may also emerge as a public health problem, particularly with demographic and epidemiological transitions that are taking place. Cardiovascular diseases, diabetes, cancer, and respiratory diseases are among those emerging as major public health concerns. While improvements in their treatment are taking place, the cost often is prohibitive. Road accidents constitute another public health hazard and crippling many people not just literally, but metaphorically too. While public expenditures on these counts are projected to increase, modern and adequate medical insurance could mitigate the costs to the individual, family, and society.

3.2.2 Need to Increase Number of Facilities and Providers

Healthcare providers: Although there are about 30,000 doctors registered in Bangladesh, in reality the doctor-population ratio is 1:4,000. It is certainly inadequate for the healthcare needs of the population. However, informed opinion suggests that there is over-supply of medical personnel in urban areas, particularly in Dhaka and in Chittagong, and an under-supply in rural areas.

Bangladesh has an extreme scarcity of trained nurses, who are another important part of the health sector workforce. The physician nurse ratio in Bangladesh is only 1.3:1. The international standard for the nurse-patient ratio is 1:4 for general care, and 1:1 for intensive care. In Bangladesh, the nurse-patient ratio is 1:13 for general patients.

There appears to be a great shortage of midwives. This is exemplified by low ANC and supervised delivery rates. The size of a UHC is typically not proportional to the size of the population and people's need for healthcare. Additionally, FWCs lack providers that are sufficiently qualified to

provide at least some essential services. Community clinics have not been established in most areas, and those that have been established often remain non-functional.

Provision of adequate healthcare facilities: A number of measures are proposed. In remote and inaccessible upazilas, as well as in larger upazilas, some FWCs located some distance away from the UHC should be expanded and upgraded to the level of mini-UHCs. This will enable people to access most of the services of an UHC without having to make long or time-consuming journeys to the actual UHC. Second, the size of UHCs in larger upazilas should be increased considerably so that most of the population have easy access to UHC services. Third, community clinics should be established and activated in every ward of every union. Finally, allocation of government health revenue to upazilas should be based on the healthcare needs of the population, and not on the number of facilities.

Adequate providers and other inputs: The quality of medical education must improve significantly. The motivation of the medical graduates must also increase towards pro-poor service delivery and effective management of life and death health issues among the population they serve. The capacity of existing training institutes might increase in terms of space and number of qualified trainers, and new training institutes, especially for nurses and medical technologists, will be established.

The number of facilities and skilled workers has to be increased considerably, and the quality of care and economic efficiency of resource use have to improve significantly. Institutional changes to increase coordination between the wings of the ministry, and between the government and the NGOs, should be achieved. The private sub-sector and NGOs will be strictly regulated, and primary stakeholders may be increasingly involved in service delivery.

3.2.3 Efficiency in Resource use in the Health Sector

In the health sector, as in most other public sectors, resource use is highly inefficient. This causes huge wastage. Elimination of wastage alone could benefit a large number of people, especially the poor. Input-mix is far from adequate. Equipments do not exist or do not work, although in many places providers and technologists exist.

The measures to be adopted are (a) the ministry must ensure that each provider works properly for full period of their contractual duty in the place where he/she is posted, private practice by the public providers should be actively controlled so that the public providers do indeed provide a public service in public facilities, and the undue interventions of monopolist associations of some providers to the proper functioning of the sector is completely eradicated; (b) the number of support providers (e.g. nurses, technologists, birth attendants) should rapidly increase, so as to change the present reverse input-mix situation; and (c) re-examination of the medical-cum-population planning staff deployment in the FWCs in rural Bangladesh. Diploma nurses with two-year education could receive another two years of education /training and be posted at FWCs for dispensing health care services.

3.2.4 Health and Population Planning Coordination

The two wings of the Ministry of Health and Family Welfare seem to lack coordination, although many services have to be delivered jointly. A number of measures are needed. First a coordination cell should be created and given sufficient authority to do so. Second, the local level bodies (specially the Upazila and Union Parishads) could be assigned with some tasks of supervision and monitoring of the activities of the service providers. Third, a powerful body should be created to regulate the activities of the private sub-sector. The body would consist of the government personnel, private providers, community members, and representatives of the consumers' associations. Fourth, health sector administration should be greatly decentralized; greater authority and responsibility can be given at each level.

3.2.5 Public Health Facilities

In addition to medicare, public health services require considerable improvement. Access to clean water and sanitation could be envisioned for 2021 through, for example, access to piped water, well maintained sewerage systems, environmentally sound hospital and industrial waste disposal. Arsenic problem in groundwater has put a damper on clean rural water supply. Measures will be necessary for mitigation through provision of user-friendly affordable household water filter systems and for piped water supply through deep tube wells by communities and government. Research on arsenic mitigation should continue. Safe disposal of waste material, monitoring water quality, ongoing education on good hygiene practices and other measures to promote safe water will continue and be strengthened.

3.2.6 Policies and Strategies

A healthy population contributes simultaneously and in various ways to accelerated economic growth and improvements in quality of life. Therefore, policy strategies such as the following may be considered:

- Coverage of all types of healthcares have to be increased steadily till 2015 when the MDGs are expected to be achieved.
- The number of service providers such as nurses, doctors and specialists should be increased and the doctor-population ratio and nurse-doctor ratio has to be scaled up.
- The numbers of TBAs, SBAs and midwives should be increased.
- The number and size of UHCs and FWCs should be streamlined with FWCs away from the UHCs, especially in large upazilas.
- The quality of medical education should be improved.
- Motivate medical graduates to pro-poor delivery of health services.
- Bio-technology, tele-medicine, training institutions especially for nurses and medical technologists can be expanded.
- Community clinics in all unions can be established.
- Efficiency in the use of health sector resources should be improved.
- Health and Family Planning co-ordination should be improved.
- Public health facilities such as pure drinking water and sanitation should be improved.
- Private sector health insurance may be encouraged.
- Increase awareness of diabetes, hypertension, strokes and obesity, which could assume pandemic proportions in the next two decades.
- Attention to Acute Respiratory Track Infection (ARI) will increase
- Coverage of most of the services should be maintained at the level achieved by 2015, coverage of some services such as births attended by skilled personnel, post-natal care will have to be increased more till 2021.

3.3 Improving Nutrition

From a nutritional standpoint, food security is ensured when all individuals in all households have the resources to obtain adequate, appropriate, and safe food for a balanced diet and good physical condition that enables the proper utilization of that food. This will take time to achieve.

3.3.1 Important Issues of Malnutrition

Consecutive nutrition surveys conducted since 1962-64 have shown that Bangladesh has consistently experienced shortages in food and nutrition. It is evident that a substantial majority of the population suffer from varying degrees of malnutrition, including protein-energy malnutrition, micro-nutrient deficiencies (such as vitamin A deficiencies, calcium deficiency disorders), iodine deficiency disorder, Iron deficiency and iron deficiency anaemia, and vitamin deficiencies.

Physical retardation in population of Bangladesh: The consequences of malnutrition are indicated by anthropometry, including childhood morbidity and mortality, poor physical and mental development, poor school performance, and reduced adult size and capacity to do physical work.

Micro Nutrient Deficiency/Hidden hunger in Bangladesh: Although most nutritionists believe that no more than 55-60 per cent of energy should be obtained from cereals, almost 70 per cent of energy has to be obtained from carbohydrates in the foreseeable future. Thus, the calorie share of protein would be 15 per cent and that of fat and oil intake would be no more than about 15 per cent. Bangladesh is experiencing a nutrition transition with high levels of malnutrition.

Stunting: Stunting is a better indicator of well-being for populations of children than weight, because being underweight is affected by weight recovery for some children between 2-5 years of age, and by some children being overweight. They do not grow up as intelligent, as healthy and as tall as they should.

Imbalanced Diet: The problem is not only inadequacy of food intake by most people; it is also a lack of a properly balanced diet. Most people deal with hunger by eating rice and leafy vegetables. In other words, most of their calories and other nutrients are obtained from carbohydrates and very little from protein and fat.

3.3.2 Suggested Food Intake between 2009 and 2021

A projection was made of suggested food intake for 2009 to 2021, which poses some substantial challenges.

With a daily calorie intake of 2250 kcal, the consumption of constituent food items changes markedly between 2009 and 2021. While the intake of cereals decreases from 455 gm/person/day in 2009 to 359 gm/person/day in 2021 (about 70 per cent of the total calorie intake), the intake of other food items changes more dramatically. This will reduce the requirement of cereals from 70 per cent to 55 per cent in 2021. That reduction in cereal consumption and increase in other food items will require significant changes in lifestyles, and education in food and nutrition. Changes in nutrition status could take place mainly through decent employment and income generation, as well as improved decision-making by women when they spend the household income. Provision of safe drinking water, improved health care and education for all women should be considered essential and part of a comprehensive strategy to eliminate malnutrition and to achieve health for all by 2030 or beyond.

3.3.3 Meeting the Nutritional Needs of 85 per cent of the Population

Meeting the nutritional target for 85 per cent of the people is a major question. Some 85 per cent of people will be above the poverty line, and land will be released from rice through increasing yields that enable greater diversification of farm products, including fish and poultry, fulfilment of the target is possible.

For 2021, a cereal intake of 359 gm/person/day was proposed, which yields about 55 per cent of the total required calorie intake of 2,250 kcal. The intake of animal food (such as meat, fish, egg, milk and milk products) has been scaled up to provide a better quality of protein and other nutrients and an increased percentage in the availability of minerals such as iron, zinc, selenium and vitamins. It also contributes some fat nutrient to the total calorie intake.

The proposed intake of added oil is about 40 gm in 2021, which will yield about 15.86 per cent of the total calorie intake. This will partially address the requirement for 30 per cent of the total calorie intake, by contributing about 7 per cent of the total calories in 2021. Intake of potato and sugar will be increased gradually to reach the proposed target in 2021.

3.3.4 Strategies and policies

- Improved education in health and hygiene.
- Reduction in the incidence of diarrhoea, dysentery, and stomach worms.
- Use of pure drinking water.
- Diversification of agriculture, reducing the proportion of land under rice, production of more vegetables, fruits, pulses, fish, dairy products, poultry and other proteins.
- Improved knowledge of balanced diets and nutrition.

3.4 2021 Vision for Education, Training, and Skills Development

Outcomes visualized as of 2021:

- An informed, knowledge-based, technologically-oriented, gender equitable learning system for all has been established. Every school age boy and girl has access to primary level institutions with the necessary facilities; they also continue in school to receive quality education. All opportunities are provided to pre-primary children, young person; and adults to meet their learning needs in a competitive world, both in formal and non-formal sub-sectors of education, without any discrimination based on gender, income, ethnicity, livelihood, geographical location, disability, and autism.
- Gender equality at all levels for teachers and students, is a natural phenomenon in institutional decision making, policy development, and at homes.
- All students enrolled in primary, secondary, and tertiary levels have access to gender-responsive health, nutrition, water and sanitation, socio-cultural development, and similar other services and activities, ensuring a fruitful learning and living environment.
- The government, civil society, the community, and other stakeholders equitably share responsibilities in ensuring quality education for all at different branches and stages of education and training.
- Democratic practices and norms prevail at all educational institutions in the country and people enjoy fundamental human rights and participate in local level planning, organizing and managing quality education.
- Universities and institutes of higher learning have been developed as centres of excellence for research and education so that they can be competitive in the global arena.
- Inclusive and gender sensitive TVET and skills development programmes are consistent with labour market demand; employment opportunities are thus created for all secondary and higher education graduates and residual drop-outs.
- A basic unified education programme at the extended (up to class VIII) primary and secondary levels is taking firm roots as against the segmented education system that creates exclusive population groups within the society provides a common knowledge and socio-cultural basis for national solidarity.
- Teaching and for learning in primary and secondary levels is improved and private tutoring and notebook will not be necessary.
- In primary, secondary, and tertiary level curricula, ICT education has been established as a compulsory subject.
- Teachers are recruited through a separate Teacher Recruitment and Development Commission and their salaries benefits and status with enhanced salary consistent with their qualifications and experience.
- TVET and skills development programmes are of a higher quality, deliver competencies required by industry and the qualifications received at recognized in Bangladesh and around the world.

The Education Policy 2010 and other relevant instruments provide the thrusts and mechanisms for the realization of the 2021 Vision for education.

3.5 Promoting Education

Education directly contributes to building a dynamic economy, an efficient system of governance, non-communal democracy and an enlightened progressive society. Illiteracy and democracy cannot run together. Recent experiences of developing countries suggest that successful implementation of population policies such as delayed marriage and late child birth aimed at a small family norm are directly related to education of girls. Education, health, nutrition, family size and employment are mutually reinforcing. Education is essential for developing the foundation required for a highly trained work force. It has been veritably designated as the foundation of growth in productivity, income and employment opportunities, and for the development of science and technology. Education is the base for deriving the benefits of the information revolution towards building 'Digital Bangladesh'.

<p style="text-align: center;">Education Vision 2021 Net Enrolment at Primary Level 100% soon after 2010-11 Literacy 100% soonest after 2014 Move towards free degree level education</p>
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3.5.1 Literacy

The literacy rate in Bangladesh has increased substantially over the past two-three decades. In this respect, the country has done better than many other LDCs, and even compared to some middle income countries, but still has a long way to go. The present male literacy rate of 59 per cent and female literacy rate of 48 per cent are far below the LMI reference countries. Bangladesh has a net primary school enrolment of 91 per cent, compared to 90 per cent in LMI and 94 per cent in UMI countries. Considering this net primary enrolment rate, Vision 2021 has put a target of 100 per cent net enrolment soon after by 2010-11 and 100 per cent literacy rate soonest after 2014.

3.5.2 Pre-primary Education

Preschool education is for children 3 to 5+ years of age before the commencement of statutory education. Starting with 5+ year old children, all children of the age group 3 to 5+ will be covered in a phased manner. Preschool is also known as nursery school, day care, or kindergarten. There are provisions for pre-primary education for one year. The following main themes are represented in pre-primary education system: (a) preparing the children for formal education starting at primary level; (b) personal, social and emotional development; (c) communication, including talking and listening; (d) knowledge and understanding of the world; (e) creative and aesthetic development; physical development; and (f) mathematical awareness.

The pre-primary school curriculum addresses the holistic development of children in order to strengthen their physical, emotional, cognitive, communication, including talking and listening skills. By 2021, most pre-primary children will be attending affirmative pre-primary educational institutions and have access to programmes of health, nutrition, social, physical and intellectual development before initiation into the formal education system.

3.5.3 Primary Education

As elaborated in Education Policy 2010 the duration of primary education will be from class I to VIII. Quality of education will be ensured in all schools irrespective of locations, rural or urban. A core curriculum will be followed by all types of schools irrespective of medium to ensure that all children in the country are basic grounding in key national characteristics including language culture, history, and geography as well as in science including information technology and mathematics. Girl students shall be protected against discrimination, harassment, or violence. A child friendly pedagogy will be enforced in all classrooms in an inclusive manner.

3.5.3.1 Key Issues and Challenges of Primary Education in Bangladesh:

- Ensuring inclusiveness and access as the duration of primary education is extended from the present class V.
- Upgrading the curricula to the need of 21st century for quality education in a gender sensitive manner enabling all students to acquire human qualities on one hand and some basic skills on the other.
- Decentralizing administration and management system to develop a good mechanism for the supervision and monitoring through involvement of local citizens in addition to official processes.

3.5.4 Non-formal/ Mass Education

The NFE Policy Framework 2006 aims to provide access to lifelong learning opportunities for improving quality of life and creating a knowledge-based society. The target group is out-of-school children, school drop-outs, adolescents and young adults, street children, and children of urban slum-dwellers' engaged in hazardous occupations. All left out illiterate, semi-literate and new-literate young persons and adults will have access to learning opportunities for basic education, adult literacy, and continuing education, including skills development for jobs or self employment. This learning will be linked to the new National Technical and Vocational Qualifications Framework (NTVQF) so that opportunities for further learning are not denied. For skill development of the rural children and adults not in formal education for one reason or another, vocational schools with a wider choice of subjects will be important.

3.5.5 Secondary Education

By 2021, it should be possible to provide quality primary and secondary education to every child. No child should be left outside this education system on grounds of her/his lower family income level, gender, religion, ethnicity, or disabilities. Measures will be taken to improve the training and quality of school teachers. Management practices will be put in place to promote women's leadership in teaching as well as governance of secondary education.

3.5.5.1 Key Issues and Challenges of Secondary Education in Bangladesh

- Improving the relevance of secondary curriculum, especially for livelihood improvement and encouraging mathematics, science, information technology and humanitarian education.
- Encouraging students to seek quality education and accordingly, improving classroom teaching-learning activities and introducing mentoring activities to develop leadership quality among the students.
- Improving mathematics, science, language education and wider use of computer and its inclusion in curriculum.
- Reducing gaps and differences between educational institutions of different types (standard, madrasa, English medium and other) and in different locations (village, urban) in the imparting of education by introducing certain common subjects (English, Bangla, mathematics, Science (ICT) and disparities in facilities and abilities through appropriate interventions .
- Sustaining gender equality for secondary education.
- Using PPP in expanding vocational education.
- Reforming the examination system in order to assess creativity, knowledge and problem solving skills of students rather than memorization.
- Improving the curricula, facilities, and methods of skill training for secondary school programmes such as the SSC (VOC) and HSC (VOC).

3.5.6 Integrated and Unified Education System at Primary and Secondary levels

With the unification of education at the primary and secondary levels, replacing the segmented education system (e.g. Bangla-medium, English-medium, Madrasa system) the exclusiveness, the

socio-economic-intellectual discrepancies detrimental to social justice and solidarity will be eliminated. The curriculum needs to be revised for consistency amongst the major parts of the streams. Therefore, all streams will teach a number of core subjects (Bangla, English, Maths, Science, ICT, and Bangladesh Studies) along with stream-specific subjects. All students at secondary levels should be able to achieve a functional knowledge of English language, enabling them to understand textbooks for higher education. All primary and secondary schools, public or private, rural or urban, will be improved to offer a high standard of education and will be equipped, at least, comparable teaching staff, laboratory and computer facilities, libraries and so forth. Free education and textbooks up to secondary level are part of Vision 2021.

3.5.7 Tertiary/Higher Education

Tertiary education system is diversified in the country in different streams such as general, technical, professional, madrasa, engineering, agriculture, business, and medical streams. There is a need to further improve in quality of education both at public, and non-government and private institutions. Inadequate professional preparation of teachers in subject matters and teaching methods, lack of academic supervision, limited encouragement and resources for research, lack of teacher and institutional accountability, and lack of sufficient textbooks, reference materials, and a habit of completing the degrees in a longer time than originally stipulated in the context of negligible tuition fee are some of the reasons affecting the quality of tertiary education.

Improvement in Higher Education: Enhanced opportunities for research will be created by establishing centres of excellence in some of the institutes of higher learning. There will be a considerable number of public and private universities and research institutes in the country. The performance of the universities will be evaluation and monitored by establishing an Accreditation Council. Attempts will be made to improve the quality of teaching, library facilities, and research. The goals for all universities are to meet international standards. Current public expenditure on education is 2.24 per cent of GNP, which should be at least 6.0 per cent by 2021.

Establishment of a Trust fund for Supporting Higher Education: The government is supporting education of meritorious students' stipend schemes for schools and public colleges. Such students will be provided full funding of education, a goal to be reached by phases. For this purpose government will set up a Stipend Fund under a National Trust with budgetary allocation and supplements by private contributions to it encouraged by providing tax incentives. This Trust Fund will finance free education up to degree level for qualified students. It is essential that this Trust Fund is not disturbed by change of government.

3.5.7.1 Key Issues and Challenges

- Upgrading the curricula and improving teaching-learning methods for quality outcomes to meet 21st century challenges;
- Integrating ICT in the curriculum irrespective of the stream and encourage computer aided learning at secondary level by establishing a coherent and comprehensive policy framework articulating national priorities in the education and reducing urban-rural gaps;
- Linking TVET curriculum to local industries and business needs and higher studies;
- Reducing session jam and elimination of politicization in higher educational institutions;
- Introducing a fair, non-political system of recruitment and promotion of teaching staff;
- Introducing a special salary scale for teachers to ensure commitments and accountability;
- Increasing revenue of the public universities to cover 50% of their budget;
- Implementing Private University Act to enhance quality education and a standardized system; and
- Setting up an Accreditation Council for ranking the quality of higher education in all the universities.

3.5.8 Some Strategic Issues in Education Development

3.5.8.1 Decentralized education system

The goal is transform educational environment in the country and be internationally competitive by 2021. The engineering and scientific pursuits and methods will be of international standards. Students will be encouraged to work for dependability, leadership, co-operative zeal, and sense of positive competition. Administrative functions of educational institutions shall be based on transparent policies in respect of admission, awarding of seats in the halls, or appointment of new teachers, contract awards and purchases by these institutions. Students will be encouraged to express their free opinion on national and international issues through a respectful dialogue and/or debate. The student unions shall be non-partisan, turned into civic societies and training centres for an enlightened democratic process.

3.5.8.2 Administrative decentralization

The administration, particularly for secondary and college education, will be decentralized in a manner so that authority does not become centralized in a single person or agency; collision of power does not arise among different persons and agencies; problems are more quickly solved and at the local levels; and school/college authorities do not need to come to Dhaka for all official matters like MPO, time scale, transfer. Regional directorates will be established to deal with these issues.

3.5.8.3 Community management of local educational institutions

A mechanism shall have to be devised, based on the Education Policy 2010, to ensure accountability of school teachers to the local community and to ensure school facilities (i.e. toilets, drinking water, and safety issues) that meet the needs of both girls and boys. Local community members and respected personalities, along with representatives of parents' should be an effective part of school management committees.

3.5.8.4 Increased investment and cost sharing in education

While government budgetary share in education may have to be doubled in the foreseeable future, private sector assistance in education, both investment and current expenditure, can improve the situation. Conducive social environment will have to be created for such contributions particularly for development of facilities including parks, stadia, orphanages, and hospitals. Training of teachers and expansion of peer approach/students mentoring activities in the secondary and higher secondary levels are areas where NGOs can supplement government efforts. Arranging special classes for poorly performing students and developing 'bridging materials' for them would help such students to achieve fruitful results. Competitive science and mathematics fairs will be held for all secondary level students.

In the interest of both equity and resource mobilization, higher education can be financed increasingly through greater cost sharing by beneficiaries, thereby making it less dependent on public resources. There are benefits to be derived through establishment of better linkages with job markets on the one hand and the world educational systems on the other.

3.5.8.5 Use of technology in education and computer literacy for all

Integration of technology in teaching learning process, teacher development process, and skills development is a must to cope with the demand of 21st century. Computer aided learning would be given special emphasis so that students become able to handle technology smoothly. Full utility of modern technology including computers for quality improvement in primary and secondary education will be explored. An Educational TV channel could be established for this purpose.

3.5.8.6 Rejuvenation of Sports and Cultural Activities

Socio-economic development must have proper cultural moorings for it to be a cohesive and flourishing process, involving all citizens. Culture is a comprehensive concept encompassing all

aspects of living of the people of a country, from production relations to behavioral pattern and finer values. The basic cultural characteristics of all culturally distinguishable groups including ethnic minorities will be facilitated to flourish, with unity in diversity established based on the common purpose of cohesive national progress that includes everybody and excludes none. In order to facilitate, in this sprint, flourishing of cultural traits and their expression in performances and other activities, encouragement and policy and budgetary support will be provided right from the early stages of schooling for cultivation of various cultural pursuits.

In the full development of the potential inherent in children and youth, physical exercise and sports play a crucial role. Good health is an essential ingredient of human capability development along with education and training. Sports and physical exercises not only help keep good health but also keeps mind clear and sharp. Encouragement and policy and budgetary support will be provided to educational intuitions at all levels aimed at promotion of exercises and sports. Competition will be facilitated for encouraging wider and purposeful participation in various sports. International participation in sports, games and cultural performance will continue to be encouraged.

3.5.8.7 Teacher development

The teacher is necessarily at the centre stage in the strategy to improve educational quality. Appropriate policies will be adopted to attract talented and inspired young people to the teaching profession and retain them in the profession. It is essential to create a critical mass of talented teachers in the education system. A national education service corps can thus be created with stipends and promises of better remunerations on condition of at least five-years of service in the education system. Comparatively under-prepared teachers in the rural areas deprive the students of these institutions of quality teaching ultimately producing poor quality graduates. Measures such as benefit packages may be introduced to attract qualified teachers to serve in rural areas.

A Teacher Recruitment and Development Commission will be established to recruit teachers and support their professional development. Teachers' status, special incentives and training (home and abroad) will be ensured. They have to be encouraged and given opportunities to do research in their respective fields, in teaching methodology, in curriculum development, and in methods of assessment.

3.6 Promoting Science and Technology

Objectives in promoting science and technology are to (a) create a generation highly educated in science and technology; (b) encourage Research and Development in government and private sector and increase the share of GDP spent on R&D; (c) establish science and technology parks; and (d) spread awareness of vocational education for work at home and abroad.

3.6.1 Technical and Scientific Education for Development

Expenditure on Research and Development (R&D) is an index of a country's orientation to science and technology. Bangladesh's expenditure on R&D in 2005 compares favourably with some of the Lower Middle Income or even Upper Middle Income countries. India & China spend on R&D 0.85 per cent and 1.44 per cent of GDP respectively. Bangladesh currently spends 0.62 per cent of GDP on R&D, which is higher than some LMI countries. However, better performance in this regard must be attempted.

Universities of science and technology, together with other general universities have to move forward with R&D, training men and women professionals in technology to meet the enormous demand for such expertise in the context of increasing investment and growth stipulated in the industries and services sector by 2021. Private sector initiative and investment including from the corporations or foreign universities will be encouraged. In this respect, the example in the neighbouring country (e.g., India) may be useful to look at. ICT Policy is cross-cutting across many

other thematic groups such as education, science and technology, infrastructure development, employment generation, private sector development, agriculture, health including nutrition, SMEs and gender equality.

3.6.2 Technical and Vocational Education and Training (TVET)

Information on the proportion of labour force in the 20-24 age group having received formal vocational training is an important statistics. A strategy to achieve nearly full employment by 2021 must ensure that all new entrants to the work force are trained formally to enhance their knowledge, skill, and creativity. Most of the vocational training is conducted in classroom style offering 1-2 year diploma courses. A comprehensive strategy is needed for ensuring full-scale vocational training with adequate practical exposure.

Both the private and public sectors, following the range of vocational training needs, should expand the network of quality vocational training institutes. The private sector which came forward to train people in computer technology may be forward and organize training of many of the trades and skills on necessary of vocational training needs in different fields. These institutes can be developed in such a manner that promotes the role of women in non-traditional skills (i.e. scientific services, trades, technical areas, finance, nursing, ICT, management, etc.). As new areas evolve, a strategy to promote and increase women in TVET is essential. The great surge in 15 - 35 age group requires creation of employment opportunities through provision of training for self-employment and/or employment in SMEs. However, strict monitoring and regulation of these training activities for purposefulness and quality will need to be put in place.

Different types of vocational training could be planned, including those in the emerging trades such as accounting and financial services, graphics and textile design, animation, etc. Management and engineering positions in commercial and services sectors will need newer type of skills. Industry can have a greater role in setting the standards for TVET and skills training and to assist government identify the skill needs of the economy in coming years. Income and remittances will increase substantially if workers could be sent abroad with appropriate skills and training. Besides traditional job markets in the Middle East, future job openings are also widely expected in European and East Asian countries where unskilled hands will not be needed much and even if they find jobs remunerations will be low.

Agricultural colleges and universities turn out agricultural scientists and extension officers. The university education in agriculture can be complemented by Indian type 'krishi vigyan kendras' which offer short and medium term courses for example, men and women farmers on specialized subjects in crop production, pisciculture, horticulture, poultry rearing and dairy farming. Educated farmers could be trained as self-employed instructors to operate farm training schools profitably. Only through such training, the knowledge gained in the universities could be transferred to the nook and corner of the country to obtain maximum leverage to increase production.

Chapter 4

TOWARDS A PRUDENT MACROECONOMIC POLICY FRAMEWORK FOR GROWTH AND STABILITY

A macroeconomic framework is presented, the main purpose being to determine targets, and offer strategy and policy guidelines underlining the Perspective Plan FY2010-FY2021. Macroeconomic tools will help achieve the development vision as envisaged within a prudent macroeconomic policy context.

4.1 Strategic Goals

- Promotion of equitable, environment friendly, inclusive and socially sustainable pro-poor accelerated growth;
- Enhancement of productivity growth across all sectors of the economy;
- Acceleration of investment from own resources;
- Speeding up of employment keeping in view the issues of gender dimension;
- Stabilization of general price level; and
- Promotion of structural transformation in the economy.

The rates of real GDP growth, inflation, unemployment, savings, investment and the level of poverty are the typical key macroeconomic indicators in a closed economy. With openness for trade and investment, as in the current Bangladesh context, external sector indicators (such as imports, exports and capital flows including inward remittances) also assume importance. Trends of these domestic and external sector indicators are examined in a longer-term perspective, identifying the prospects and constraints, and bringing out targets and strategies for the Plan; applying qualitative judgment alongside quantitative estimations from a dynamic macro-econometric model and time series analyses.

4.2 Macroeconomic Framework

The macroeconomic framework of the Perspective Plan will support the strategies and policy guidelines to achieve the development vision through macroeconomic stability. For Bangladesh, the journey to middle income country and high HDI status requires sustained growth in the national economy and its equitable and inclusive nature. The technical framework designed to predict growth and related dimensions of the macro economy shows that the economy needs to grow at a consistently high rate over the next eleven years for the vision to be realized (Table 4.1).

The Bangladesh economy has sustained modestly high growth in the past. Achieving the proposed robust growth will require a major spurt in the rate of investment. Positioning the country for accelerated growth will demand strong precautions to manage the negative social and environmental implications attendant to high growth, such as high inflation, rising income inequality, environmental degradation and expanding regional disparity. Effective management of

high growth will necessarily involve strong fiscal and monetary policy coordination as well as effective public-private collaboration.

Table 4.1: Key Macroeconomic Indicators

	Benchmark FY09	Target FY15	Target FY21
Real GDP Growth (%)	5.9	8.0	10.0
As per cent of GDP			
Gross Investment (%)	24.2	32.1	37.5
Gross Domestic Savings (%)	24.0	27.0	30.0
Total government revenue (%)	10.4	15.5	17.1
Total government expenditure (%)	13.8	20.5	21.8
Exports (billion US\$)	15.6	36.3	91.1
Imports (billion US\$)	20.3	49.6	131.3
Remittances (billion US\$)	9.7	22.7	48.5
CPI inflation (%)	6.7	7.4	7.9
Unemployment rate (%)	30.0	20.0	15.0
Poverty (head count, %)	36.0	24.5	14.4

The macroeconomic policy framework will have to remain vigilant and responsive to developments in the economy that may endanger the desired stability and equity. The macroeconomic framework's priorities will be to align the macroeconomic indicators to become consistent and more effective in promoting equitable growth and sustainable development.

Growth in real GDP will rise to 8.0 per cent in 2015, and then to 10.0 per cent in 2021, to provide the required assault on unemployment and poverty and improve people's living standards. While factor accumulation, especially capital, will act as the major stimulus to growth, for which gross investment rate will rise to about 38 per cent of GDP in 2021, productivity growth will begin to play an increasing role and is targeted to contribute about 20 per cent of economic growth by 2021. The new initiatives proposed in the areas of education, IT, R&D and science and technology will be key to this.

While the goal will be to maintain a macroeconomic framework that is consistent with rapid and sustained growth, measures will be taken to ensure that fast growth does not lead to serious imbalances in fiscal operations, inflation, or balance of payments. The private sector will be the leading actor in raising economic growth, and public investment will be restructured to become more effective in promoting growth and development. Although the domestic savings rate has improved, it needs to be further geared up for which several strategies will be adopted, e.g. reforms in the financial system to provide easy access of rural population and small savers to formal financial institutions; measures to divert an increasing share of remittance incomes to productive investments, and low inflation to facilitate more savings.

4.2.1 Public Revenue and Expenditure

The revenue-GDP ratio stands at around 11 per cent. It is a strong impediment to meeting resource requirements in the public sector. In addition, the tax structure does not have a pro-poor bias: the bulk of the revenue is generated by indirect taxes, mostly value added tax, at local and customs levels, and the contribution of direct taxes is only 25 per cent. Low revenue productivity aside, tax evasion remains high. The target is to make the tax-structure more pro-poor by raising the contribution of direct taxes to the total tax revenue to at least 40 per cent in 2021. The strategies to collect the required public revenues shall include:

- Broadening of the tax base, raising both direct and indirect taxes with appropriate rationalization and reforms;
- Strengthen the professional and technical capacity of the revenue administration to monitor potential tax payers, countering tax evasion, and making available strengthened and effective services to tax payers to raise tax compliance;
- Deepen organizational and other reforms of revenue collecting organizations to transform into quality institutions to meet the revenue needs, service requirement of tax payers, and facilitation of productive activities.

In general, a pro-poor bias is observed in public expenditure due to large spending in relative terms on social sectors including education, health, and social safety nets. There has also been large expenditure on disaster management. Total public expenditure is, however, low; about 14 per cent of GDP which is not enough to meet the public sector's expanding needs. In addition, the need during the Perspective Plan will be to make the budget an effective instrument of economic management within an integrated and accountable framework. The thrust will be to make public expenditure more pro-poor, environment friendly, and gender sensitive; to improve the effectiveness of public spending; and to establish accountability and transparency of public expenditure. More attention will be given to sustainable human development by mainstreaming disadvantaged people, including people with disability in the growth-development transformation.

4.2.2 Inflation

Bangladesh has generally succeeded in maintaining reasonable price stability. Occasional spikes in the inflation rate arose mainly as a result of supply disruptions due to natural disasters, global price shocks and inadequate regulation and monitoring through buffer stock build up. Since high inflation, especially led by food price inflation (which is common in the country), directly hurts poor people, the target will be to maintain a moderate rate of inflation of around 6-8 per cent per year by ensuring well coordinated monetary and fiscal policies; improvements in productivity; attention to supply augmentation; enhanced public sector role and strengthened competition policies.

4.2.3 Monetary and Credit Policies

Monetary and credit policies pursued by the Bangladesh Bank seek to contain price pressures both on the demand and supply sides. Demand side pressures are kept in check by appropriate monetary policy instruments to regulate monetary growth and liquidity; while policies and programmes to channel adequate credit flows to all productive economic sectors are employed to ease supply side shocks by stimulating output responses. During the Plan period, the Bangladesh Bank will continue its recently intensified thrust for fuller, deeper financial inclusion of all population segments and all productive economic sectors, including agriculture and SMEs; encouraging bank-led partnerships with Micro Finance Institutions and mobile telephone companies for cost effective IT based delivery of financial services. The resultant deepening of the market will afford wider, newer transmission channels of monetary policies for more effective containment of demand side price pressures; with deepened financial inclusion simultaneously bolstering output responses on the supply side.

The strongly growing agricultural and industrial production bases for the economy envisioned in the Plan will need a broader financing base than mere bank credit funded by short term deposits. In addition to the existing openness to Foreign Direct and Portfolio Investments, the introduction and promotion of newer dimensions in credit and equity markets, such as debt trading and debt securitization, venture capital and private equity funds, will be promoted and supported. Structuring of a crop insurance scheme mitigating output and price risks in crop production, and of a partial guarantee scheme mitigating credit risks in SME financing, which are important in drawing spontaneous engagement of markets in financing these growth sectors, will be initiated.

4.2.4 Micro credit

Micro credit models have demonstrated the advantage of taking financial services to the doorstep of poor people. A revealing lesson from the models is that group dynamics work well in the recovery of loans and poor women can emerge as a significant force which, with education and training, can realize much of the development potentials. Despite the significance of NGO based micro credit to the building of awareness and poverty eradication, there remain questions of high interest rates, status of savings accountability, transparency, family based management status of savings of the members of the NGOs at low interest rates, and transparency in the destination and use of such savings.

4.2.5 Exchange rate policy

Like most other developing and emerging market economies, Bangladesh is pursuing and will continue to pursue a managed float of the exchange rate of the domestic currency, the Taka, with a view to preserving external sector viability. This would generally involve maintaining Taka on a slight undervaluation bias to provide a competitive cushion for exports and incentives for workers' remittance inflows. It will also enable the building of adequate foreign exchange reserves as a cushion against external shocks. Any deep undervaluation with its attendant inflationary consequences will, however, be avoided.

4.2.6 Productivity

The Plan targets the annual real GDP growth rate to rise to 8.0 per cent by 2015, and further to 10.0 per cent by 2021, significantly improving living standards of the population by drastically reducing unemployment and poverty, generating substantially higher output surpluses for export and revenues for the government. Per capita annual income is projected to rise to about USD2,000 by 2021.

Growth accounting reveals only a modest contribution (about 8 per cent per annum) thus far of technological change to growth in Bangladesh. Improvements in total factor productivity contributed as much as 25-50 per cent of post World War II growth in East Asia, and in the recent high growth of some neighbouring countries. This will therefore be a major potential growth source for Bangladesh as well, over and beyond the Plan period.

Target By 2021, productivity enhancement is targeted to contribute about 20 per cent of economic growth in Bangladesh.

Strategies for productivity enhancement include

- Initiatives planned in education, Information Technology, Science and Technology, Research and Development. Innovations in production techniques and processes will be promoted and supported. There will be co-ordination in public and private sector programmes and initiatives; and there will be joint public and private sector collaboration initiatives wherever appropriate.
- Integration and coordination of output activities in the agriculture, industry and service sectors.

4.2.7 Private Sector Savings and Investment

The productive capacity in the Bangladesh economy is largely private sector based. Public investment in GDP percentage has declined in recent years, falling to 4.6 per cent in FY2009 from 6.0 per cent in FY2006. Private investment, meanwhile, is rising, increasing to 19.6 per cent in FY2009 from 18.7 per cent in FY2006. Domestic savings still fall short of domestic investment by over 4 per cent of GDP however; met by net factor income and workers' remittance inflows from abroad, with the role of FDI still not very significant. There is need and room for a substantial increase in domestic private sector savings, for higher investment levels consistent with the Plan's output growth goals.

Target: Growth in private sector domestic savings will be geared up, in line with the investment and output growth goals of the Plan.

Strategies for enhancing private sector savings will include:

- Promoting and broadening long term savings options in life insurance (including the newly emergent micro-insurance via MFIs), pension funds and provident funds;
- Promoting and broadening investment channels in capital markets to attract higher shares of workers' remittance inflows;
- Promoting fuller financial inclusion of the rural and urban poor, mobilizing their small savings with cost-effective, IT-based financial services from bank-led partnerships comprising banks, MFIs and mobile telephone companies.

4.2.8 Public Expenditure Management

The previous discussion on macroeconomic framework explains that public expenditure in Bangladesh is generally pro-poor, with major shares going to social sector spending in education, health, disaster management and a social safety net for the poor and vulnerable; and with a gender bias favouring women in programmes for maternal and neonatal healthcare, women's education and empowerment.

Public expenditure, at about 14 per cent of GDP, is among the lowest in the world, and is meagre in relation to the increasing need for public services. The revenue base of about 11 per cent of GDP needs to be broadened substantially, as domestic and external financing of fiscal deficit cannot be expanded much without impairing debt sustainability.

Visible public expenditure outlays for defence has remained well contained, and the participation of defence forces in UN peacekeeping missions has been a source of external income in the budget. Given the pressing need for public expenditures on development, increases in budgetary outlays on defence need consistent monitoring.

Significant weaknesses exist in the quality and efficiency of public expenditure, resulting in delayed low quality implementation of public investment projects, with some said to be inadequately appraised and of doubtful viability. There is a need for streamlining appraisal, implementation and evaluation processes for public investment projects, properly integrating these with budgetary systems and processes in an accountable, transparent framework of economic management, in scrupulous compliance with public procurement law and guidelines reviewed periodically to plug any inadequacies and loopholes.

Goals for strengthening public expenditure management include:

- Improving the effectiveness of public spending with proper appraisal, efficient implementation and evaluation of public investment projects; and
- Establishing transparency and accountability in public expenditure.

4.2.9 Poverty Profile and Inequality

The poverty profile measured by head count ratio using the cost of basic needs approach revealed that 57.6 million, or 40.6 per cent of the 2005 population, lived below the poverty line. It also indicated a 1.8 per cent annual poverty decline between 2000 and 2005. At this rate, the head count ratio of national poverty will stand at 24.5 per cent of the population in 2015, thereby achieving one of the major MDGs. Based on daily calorie intake, absolute poverty (intake of less than 2,122 kcal a day) came slightly lower at about 40 per cent of the 2005 population. National income inequality measured by Gini coefficient was 0.46, with inequality rising faster in urban areas than in rural areas of Bangladesh. Higher earnings associated with capital intensive activities and with higher quality human capital are the main factors widening income inequality in urban areas.

Income inequalities in rural areas are driven by inadequate access by poor people to benefits from technological and infrastructural improvements, against better access for the elite in the rural power structure, and from the higher incomes of rural households with emigrant family members earning abroad.

Anti-poverty, anti-inequality measures need to target removal or reduction of inequalities in advancing opportunities for people in different income brackets. This particularly includes targeting the opening of blocked advancement opportunities for disadvantaged rural and urban poor people. These cross sectoral issues and measures are dealt within the various relevant chapters of this Plan document.

Chapter 5

PROMOTING INDUSTRIALIZATION AND TRADE POLICY REGIME

5.1 Industrialization

The industrial sector is yet to figure prominently in the Bangladesh economy in terms of its contribution to GDP and employment. Between 1983-84 and 2005-06, its share (manufacturing) in GDP increased from about 10 per cent to 17 per cent, and the share of employment rose from 9 per cent to 11 per cent. However, the dynamism of the industrial sector is reflected in the sectoral share to GDP and particularly in the share of incremental GDP value addition. On the weak side, the manufacturing sector is narrow-based – only five industries (ready made garments and textiles, fish and seafood, leather, fertilizer and pharmaceuticals) accounted for 81 per cent of the growth achieved during the 1980s. Concentration of growth in a few sectors increased after the trade liberalization of the 1990s. Two broad sectors – textiles, wearing apparel and leather (BSIC code 32), and food, beverages and tobacco (BSIC code 31) – have dominated the overall manufacturing sector. Between 1992 and 2000, the number of large and medium enterprises in the manufacturing sector increased, while the number of small enterprises declined.

5.1.1 Strategic Goals

Bangladesh's industrialization process will need to be significantly geared up in the coming years if macroeconomic performance targets for 2021 are to be achieved. The overarching goal for the country's industrialisation is to enhance the industrial sector's contribution to GDP to 40 per cent over the next decade, with a share of 30 per cent for the manufacturing sector (Table 5.1).

Table 5.1: Structural Change (sectoral share of GDP, per cent)

Sectors	Average (FY04-FY09)	Target FY2015	Target FY2021
Agriculture	21.70	16.0	15.0
Industry	29.00	35.0	40.0
Manufacturing	17.10	26.0	30.0
Service	49.30	49.0	45.0

5.1.2 The Challenges

The country's industries sector has tended to remain narrow-based, with locational concentration and with low share of the country's total workforce. Accelerated pace of industrialisation will be necessary to address the increasingly diminishing capacity of agriculture to absorb the incremental labour force, strengthen backward and forward linkages with agriculture and services sectors, cater to the growing domestic demand for industrial goods, and take advantage of emerging opportunities in the global market. The textile and ready made garment sector employs about 6.5 million people.

As a fast growing sub-sector, the future employment opportunity of textile sub-sector is expected to increase rapidly to cater to growing domestic and export demands. Initiatives will be needed to strengthen small and medium scale enterprises, as well as to identify large-scale manufacturing industries that can compete in foreign markets and withstand the competitive pressure of foreign suppliers in the domestic market. This will necessitate a broadening of the industrial base by creating a conducive environment for private sector investment, through targeted initiatives towards technology transfer, upgraded skills and development of appropriate human resources, development of knowledge-based industries and by raising labour and capital productivity at the enterprise level. Rationalisation and restructuring of SOEs will need to be continued so that strategically placed SOEs can run profitably on a commercial basis, and others are handed over to the private sector.

5.1.3 Strategies to Pursue

- Thrust will be given to SME-based industrialisation that will be labour-intensive, decentralised in terms of location, users of indigenous raw materials, low inputs and will be serviced by adequate human resources and technology adoption/adaptation and transfer. The aim will be to cater to the growing domestic market, and to enable SMEs to link-up with foreign markets through a package of support including credit, common services, upgrading of skill and institutional support. The SME strategy will network the short gestational and highly job intensive micro and small industries in the agro-based, poultry, livestock and fish related projects aiming to produce balanced fertilizer, biogas energy, milk products, poultry products, handicrafts, horticultural goods for the market at home and abroad.
- In view of emerging opportunities in the global market, and by making best use of the preferential market access treatment offered to Bangladesh as an LDC, initiatives will be taken to further strengthen existing labour-intensive manufacturing sectors such as textiles, RMG, leather and frozen-food by promoting product diversification and stimulating an upmarket move in these traditional sectors.
- The textile sub-sector being an only input supplier for RMG, will be strengthened in terms of higher productivity, quality and product diversification, and be given facilities for industrial credit at favourable conditions to make the RMG products competitive in the global market.
- Policy support and promotional initiatives will be put in place to realise emerging opportunities in new sectors identified as thrust sectors in the Industrial Policy 2010. These include ICT-based sectors, food, beverages, light engineering, cement, high-end ready made garments, pharmaceuticals, ship-building and others. Export incentives such as bonded warehouse facilities, duty drawback and institutional – infrastructural support in the form of establishment of industrial park, dedicated private sector EPZs and SEZs will be put in place to stimulate their growth. Facilities shall be developed for entrepot export.
- FDI will be encouraged through various policy incentives to stimulate access to technology and frontier know-how, to access global market opportunities and take advantage of the growing regional market.
- Developing Bangladesh as an exotic tourist destination in Asia and increase tourism's contribution to GDP from 0.70 to 2 per cent by 2015 and then to 5 per cent by 2021.
- Initiatives to build up the appropriate human resources required for rapid industrialisation through public policy support and public-private partnerships.
- The capital market will be further liberalized, reformed and deepened to create opportunities for raising equity to support industrial sector growth. Appropriate mechanisms will be put in place to stimulate, and promote mobilization of resources from small domestic savers in the country's capital markets and to attract portfolio investment.
- Policy support and incentives will be provided to encourage industries to be set up in areas outside the traditional centres. Appropriate support will be given by developing the required infrastructure, and putting in place additional incentives.

- Adequate support will be given to service-sector based industries. In view of the developing demand, both in the domestic and global markets, appropriate support will be given to the development of ICT based industries. A credible standardization and certification mechanism of international standard will be established.
- Whilst privatisation of identified SOEs will continue, strategically placed SOEs will be provided with adequate support to run as commercially viable, profitable organisations, if need be with blending of public sector ownership and private-sector management.
- An exit strategy will be developed for unsustainable sick industries and rehabilitation of those with the potential to be economically viable through restructuring.
- Institutions related to industrial development (such as BOI and BEPZA) will be provided with adequate resources to enable them to function appropriately and in keeping with developing needs, from the perspective of promoting and stimulating domestic investment, FDI and joint ventures.
- The jute industry is expected to grow further in view of the eco-friendliness and biodegradability of the jute products. Developing diversified jute products through appropriate use of technology, developing different product mix of jute and other natural fibres will be encouraged, and Bangladesh Jute Research Institute (BJRI) can be strengthened in this regard.

5.2 External Sector

The degree of the economy's openness – the total trade (export + import) to GDP ratio increased to about 43 per cent in 2007-08, from around 14 per cent in 1980-81. That expansion is due to robust growth of imports as well as exports. Average annual growth of exports, about 9 per cent in the 1980s, increased annually to about 12 and 14 per cent respectively in the 1990s and beyond. For imports, the rates increased similarly from 6 per cent in the 1980s to about 10 and 12 per cent respectively in the 1990s and beyond. But with the growth of trade, the country experienced chronic trade deficits with negative current account balances between 1997 and 2008. This has recently turned out to be positive, thanks to robust growth in the inflow of overseas remittance. Increasing remittances could also significantly raise much needed investment.

Manufactured goods make up a very large proportion of total exports – about 90 per cent – but with a very narrow, low skill and low value addition export base with heavy concentration on ready made garments, both woven and knitted. As well as commodity concentration of exports, Bangladesh has market concentration: the combined shares of the EU and the NAFTA in Bangladesh's total exports have remained unchanged at around 86 per cent in recent years.

5.2.1 Strategic Goals

The target with regard to the external sector is to ensure strengthened global integration of the Bangladesh economy by building necessary trade-related supply side capacities. This will be realised through raising the competitiveness of Bangladesh's external sector, ensuring a larger share for the country in the global trade in goods and services, and by encouraging both product and market diversification. This will be done by renewing efforts at moving upmarket and by raising the efficacy of trade facilitation measures. Bangladesh's strong performance in the global labour services market will be continued and further consolidated. The overarching goal here will be to ensure that export of goods and remittance earnings are equivalent to about 38 per cent of GDP by 2021 (Table 5.2).

Table 5.2: External Sector (% of GDP)

Items	Average (FY04-FY09)	Target FY2015	Target FY2021
Export	16.1	22.0	26.0
Import	21.4	30.0	32.0
Trade Balance	-5.3	-8.0	-6.0
Remittances	8.3	8.0	12.0
Current A/C balance	1.0	2.0	6.0

5.2.2 The Challenges and Future Direction of Trade Reforms

Bangladesh has been able to post double-digit growth rates over the recent years to which the robust performance of export-oriented apparels sector has contributed significantly. Other sectors such as leather and footwear and frozen food have also registered high growth. Bangladesh's external sector, both in goods and remittance services, also demonstrated commendable resilience during the global economic crisis, although the lagged responses have started to be felt in recent times.

Bangladesh's trade and industrial policies will need to be well integrated to support the twin ambitions of export-promotion and rapid industrialisation. Bangladesh has experienced significant trade policy reforms since the early 1990s with substantial reduction of tariff barriers and removal of a large number of non-tariff barriers, including QRs. The import liberalisation programme has been accompanied by generous promotional measures for exports, including significant reduction of anti-export bias and putting in place facilities such as bonded warehouses and duty drawback, subsidised interest rates on bank credit, cash compensation schemes, duty-free import of machinery and intermediate inputs, and exemption from income tax and other taxes. EPZs and private EPZs were established to promote domestic and foreign export-oriented investment.

As for future direction of trade policy reforms, it is desirable to follow a gradual reduction in tariffs on imports of final goods, with a faster reduction in tariffs on imports of capital machinery and intermediate goods. This option of tariff liberalisation will provide domestic firms access to globally-priced intermediate and capital goods and offer import competing domestic firms the required time to adjust to foreign competition.

5.2.3 Strategies to Pursue

- Favourable tariff regime for imports of capital and intermediate goods will be put in place. Selected sectors will be provided with time-bound protection in accordance with strategies set out in the industrial policies, and to enable import competing sectors the required adjustment space.
- To stimulate technology transfer and adoption, fiscal incentives will be provided to users of that technology.
- Support will be provided for market diversification so that Bangladeshi products are able to make inroads into new markets, including those of Japan, North-East Asia and regional markets. Special efforts will be taken to stimulate South-South trade.
- Initiatives will be taken for intra-ready made garment diversification by investing in quality promotion. The private sector will be encouraged to invest in fashion, design and quality control to facilitate upmarket movement. Textiles should be treated as a thrust sector.
- A vocational training system will be geared towards developing the required human resources for export-oriented industries and export-oriented investors so that Bangladesh is able to enhance her competitive edge in the global market.

- The standards and quality of manufactured products and exports will be maintained and further improved by enhancing SPS-TBT assurance capacities. To that end, the Bangladesh Standards and Testing Institution will be strengthened in areas of quality assurance, accreditation and certification.
- Export related institutions, including the EPB, BEPZA and SEZs, will be given adequate support to be able to provide necessary services to exporters.
- To further strengthen Bangladesh's foothold in the global services market through higher remittance earnings, by streamlining procedures for recruitment of overseas workers and by providing credit and other support to migrant workers.
- To realise the potential benefits of expected openings in the global services market targeted programmes of skill up-gradation and training, including language training, will be undertaken. Bangladesh's vocational training system will be geared towards this.
- Migrant workers' remittances will be provided with appropriate support and incentives to encourage investment in productive sectors.
- Maximum efforts will be made to take advantage of the various preferential schemes and market access initiatives originating in the WTO and provided bilaterally.

GLOBALIZATION AND REGIONAL COOPERATION CHALLENGES

The Bangladesh economy is more integrated with the global market today than ever before. This is largely due to rapid growth in trade, massive out-migration of labour and remittance inflows, tariff reforms and lifting of quantitative restrictions, financial sector reforms including exchange rate liberalization, and creation of a favourable FDI regime. In terms of real trade growth, Bangladesh has done well (13th of 130 countries) with exports rising from 10 per cent of GDP in 2004 to over 17 per cent today. Nevertheless, Bangladesh is still regarded as a 'least liberalised' country ranking 140 out of 152, suggesting much work remains to be done. Its capital account, for example, remains restricted, there is widespread and arbitrary use of supplementary duties and taxes on imports, and both domestic and foreign investors find the cost of doing business very high.

6.1 Remittance Inflows

Remittance flows currently stand at about 8 per cent of GDP. They have become a resource of considerable importance and emerge as a very promising source of external resources.

6.1.1 The Challenges

Three issues are involved in expanding remittances: training and recruitment of labour for overseas employment, ensuring rightful earnings, job security and welfare at workplace abroad and facilities for sending home remittances. Due to measures such as disseminating information on remittances, quicker delivery process, enactment of the Money Laundering Prevention Act 2002, exemption of remittance and remittance-born returns from taxes, offering a 10 per cent quota in initial public offers of local companies to non-resident Bangladeshis and allowing interest-bearing foreign currency accounts in major currencies in Bangladesh, offering priority in industrial facilities – land, electricity, and import of machine, and materials, the flow of remittances has increased positively. Similarly, addressing the issues incorporated in the Fifth Five Year Plan – regulation of private manpower agencies, strengthening of the wage earners' fund at important overseas workplaces and simplification of immigration procedures, evaluation and review of the system of licensing manpower recruiting agencies, will contribute to the increasing remittances further still. In addition, it is also vitally important to address the cost of migrants' access to bank credit for meeting the cost and optimal use of the remittances in productive activities.

6.1.2 Strategies for Actions

- Close monitoring and supervision of the activities and practices of recruitment agencies in their provision of information of skill requirement, working condition, accommodation, benefits and obligations to migrants.
- Introducing a technology-based system of effective practices for remitting money. Large non-bank institutions with ICT-based networks in rural areas may be engaged in clearing and settlement processes.
- Giving labourers training in the vocations and skills that have a high future demand in global markets. The functions and roles of foreign missions should be redefined to make such assessments and protect the rights of migrant workers.

- Making the Overseas Employment Policy more comprehensive so that it covers multiple aspects of migration, including workers' and employers' documentation, employment contracts, their implementation, and settlement of workers welfare.

6.2 Foreign Direct Investment

The Perspective Plan will articulate a clear policy to encourage FDI, and remove inhibiting constraints. As the economy opens further, FDI is likely to be attracted to (i) infrastructure and power; (ii) oil, gas, and mining; (iii) export sectors, including textiles and related industries; (iv) fertiliser and agro related industries; (v) ship building and leather; and (vi) retail marketing. The main problem for both FDI and local investment is low investor confidence, a weak property rights regime, weak infrastructure, lack of gas and electricity, poor governance, and high transaction costs. Net FDI rose from 0.31 per cent of GDP in FY1991 to nearly 3.0 per cent of GDP in FY2001, but fell to 1.4 per cent in FY2008.

6.2.1 Strategic Goals

Notwithstanding a very highly FDI-friendly policy regime, containing generous incentives and safeguards for investors, FDI flow has been inhibited by numerous factors – non-compliance with regard to some safeguards in the past (with debilitating effects on FDI by US investors) and restrictive conditions such as infrastructural deficiencies – power shortage, gas scarcity, inadequate port facilities and communication difficulties, political unrest and a poor law and order situation, and others.

6.2.2 Strategic Actions

The Perspective Plan will consider the following strategic actions:

- The problem of image can only be changed when there are meaningful changes in the ground reality. While the FDI regime is considered highly favourable, there remain crucial bottlenecks that will be removed.
- The general governance situation (and related high transactions costs) will be addressed to improve the country's image and stimulate foreign investment.
- A special effort will be made to encourage regional investment in emerging and potentially high return sectors (e.g. software development and IT from India, electronics from China).
- A major effort will be made to establish a string of Special Economic Zones (SEZs) along international borders. This is designed to stimulate cross-border investments and trade, in line with the successful examples of China and Vietnam.
- The private sector will be encouraged to enter joint ventures and other forms of collaborative investment with NRBs and foreign partners in areas of high potential.

6.3 Addressing the Multilateral Trading Regime

Addressing the multilateral trading regime will mean coping with the challenges of asymmetric and inequitable trading rules that are prejudicial to the trading interests and performance of LDCs, including Bangladesh.

6.3.1 Major Areas of Negotiation

Major areas of negotiation include agricultural trade liberalization, duty-free quota-free market access, non-agricultural market access, and trade in services. Other important issues include rules of origin, anti-dumping and aid for trade.

Agricultural trade liberalization implies market access opportunities for some LDCs because of reduced tariff barriers in developed countries' markets. Duty-free quota-free market access implies

that Bangladesh's ready made garment export markets will be more concentrated. In addition, expansion of the unskilled labour-intensive export-oriented ready made garment sector will have a greater beneficial effect on poorer households, who depend more on unskilled labour income than other households. In non-agricultural market access, the existing tariff preference margin is not sufficient to cover the administrative costs associated with fulfilling Rules of Origin requirements. For trade in services, the most important issues include the temporary movement of natural persons under Mode 4 as well as on the cross-border supply of services under Mode 1.

Under Rules of Origin, Bangladesh is often unable to fully utilize preferential market access provided to them, because of stringent Rules of Origin requirements, which have to be fulfilled. The use of simple and transparent Rules of Origin criteria would undoubtedly enhance market access for exports originating in LDCs. The imposition of anti-dumping measures creates hurdles to achieving better market access. Developing countries, including Bangladesh, have not received the special consideration mandated by the ADA, and this has undermined their potential to benefit from trade liberalization. The WTO anti-dumping rules therefore need to be amended. The benefits of Aid for trade, which was incorporated in the Hong Kong Ministerial Declaration for the first time as a special and committed assistance, are yet to accrue to LDCs including Bangladesh due to the lack of trade-related infrastructure facilities and deficiency of knowledge on market access possibilities.

6.3.2 Strategies for Actions

Specific strategic actions with regards to the areas and issues mentioned include:

Agricultural Trade

- As a net food-importing LDC, Bangladesh should negotiate for compensation for higher food prices resulting from reductions and elimination of export subsidies as well as domestic support subsidies on account of agricultural trade liberalization.
- The issue of monetisation of food aid is also important for LDCs, including Bangladesh. Food aid is essential in supporting the poor section of the population. However, when an LDC needs cash support, there should be flexibility in the monetisation of food aid. Bangladesh should negotiate along these lines.

Aid for Trade

- Trade should be mainstreamed in the country's national development agenda, and should particularly incorporate Aid for Trade.

Duty and Quota Free Trade

- Bangladesh has a list of products covering 97 per cent of exports qualifying for DFQF market access. Diplomatic and other steps are necessary to ensure that the remaining 3 per cent is waived for the LDCs. An additional strategy would be to seek low tariffs (e.g. 5 per cent) on commodities on the exclusion list.
- Bangladesh needs to establish a strategy to secure the political attention of the US administration and liaise with the US trade team to meaningfully enhance Duty-Free Quota-Free and tariff lines under Annex 4 of NAMA.
- Research should be undertaken to assess the Duty-Free Quota-Free schemes announced by developing countries for LDCs.

Non-Agricultural Market Access

- Formation of a "competitiveness fund", or other development assistance, due to preference erosion, which will help to undertake adjustment programmes.
- Gradual reduction in tariffs on products that have significant export activity and margins of preference. An 'index of vulnerability' may be developed to identify products of special concern.

Trade in Services

- Negotiation for a mechanism to secure “permanent, non-reciprocal, special priority”, notwithstanding any provisions of the GATS.
- Strong negotiation for market access for natural persons in Mode 4.

Rules of Origin

- Establish a simple, transparent, and preferential Rules of Origin. Rules of Origin similar to those of the Canadian GSP, which stipulate that 25 per cent domestic value addition can be sought.

Anti-dumping

- Until ADA rules are suitably reformed, it is necessary to seek a moratorium on anti-dumping action on exports for a certain period.

Capacity Development in Trade and Negotiations

- Measures will be taken to consolidate and expand capacity for trade negotiations from a knowledge and confidence base.

6.4 Strengthening Regional Cooperation

The South Asian Association for Regional Cooperation (SAARC) consists of seven countries – Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. SAARC was long in the planning, but was established formally in 1985 with the objectives of promotion of regional trade and investment, development of infrastructure, and communication and preferential trading arrangements. Subsequently the South Asian Preferential Trading Arrangement came into being in 1995. Further efforts towards a free trade area have continued since January 2006. Some progress has been already made to increase regional trade, especially bilateral trade with India. Still, much needed cooperation for investment in important areas is yet to materialize, due to political tension and asymmetry within the region. Other regional cooperation, such as the Asia Pacific Trade Agreement, and the Bay of Bengal Initiatives for Multi-Sectoral Technical and Economic Cooperation have not yet made the desired progress to boost regional economic cooperation and progress.

6.4.1 Case for Sub-Regional Cooperation

In recent years, proposals for sub-regional cooperation between Bangladesh, India, Nepal and Bhutan have been gaining ground. Bangladesh, India (the eastern states of India, to be more specific), Nepal, Bhutan and Myanmar are endowed with rich complementary resources that offer significant opportunities for cooperation in numerous respects. The region has one of the richest resources of hydro-electric power in the world, with concomitant scope for electricity generation and marketing in electricity-deficient countries, including Bangladesh.

Sub-regional cooperation for water resource management and flood control measures has bright prospects. Bangladesh has an advantage in its unique geographic location, which offers potential for significant economic benefits. Nepal and Bhutan are land-locked, but are located very close to Bangladesh – and are closer to the Bangladesh seaports than to those of India. India surrounds Bangladesh but the eastern states of India are partly isolated by Bangladesh such that Bangladesh can offer closer routes and cheaper transport costs to and from India’s eastern states. Bangladesh offers the nearest seaports for these states, and for Nepal and Bhutan. There are other complementary resources in the region that offer opportunities for cooperation.

Growth triangles in ASEAN countries, which formed an integral part of the process of regional cooperation and benefited the adjoining regions, have provided empirical support to the idea of sub-regional cooperation in the eastern part of the sub-continent.

Prospects of FDI and Joint Venture: There has been relatively little foreign direct investment in Bangladesh, and less still from the South Asian region. There are some Indian investments in Bangladesh, but their volume is not substantial. The main constraints to FDI are inadequate and inefficient infrastructure facilities, such as power, transport and communications, and port facilities.

In the early 1970s, negotiations for joint investment involving Bangladesh and India reached an advanced stage. The projects were (a) a fertilizer factory based on gas in Bangladesh, (b) a cement factory based on limestone of NES of India, and (c) a sponge iron enterprise using Bangladesh gas and Indian iron ore. In addition, frameworks of cooperation in other areas were underway. These areas remain prospective even today. Other potentially promising areas of investment cooperation include gas exploration, petrochemicals, textile machinery, electrical goods and leather goods. Health, education and tourism also offer potential. Existing cooperation in jointly combating terrorism, militancy and illegal drugs/arms trafficking can be strengthened to every country's benefit.

Cooperation on Road and Highway Projects: The idea of greater economic cooperation among the Ganges-Brahmaputra-Meghna basin countries – Bangladesh, Nepal, Bhutan and north-eastern India was envisaged with conceptualization in 1959 and proposal in the early 1980s of the Asian Highway System by UN- ESCAP. The objectives of the Ganges-Brahmaputra-Meghna triangle envisaged by the ADB are: joint development and management of water and other resources, development of physical infrastructure such as roads, railways and ports, and cooperation in other areas such as environment protection and tourism.

Like other cooperating countries in the grand Asian Highway System (which is a roadmap for further regional, sub-regional and bilateral cooperation), Bangladesh should not be left out of the opportunity of developing links with other parts of the region and beyond. The system will open the gateway to domestic investments and FDI in Bangladesh. A very specific benefit relates to Bangladesh's strategic location for use as valuable route for trade and commerce of India, Nepal and Bhutan.

6.4.2 Strategies for Action

Strategies for strengthening regional cooperation include:

- More vigorous efforts in multiple forums to make SAFTA, APTA and BIMSTEC more effective organizations.
- Bilateral negotiations are important means of effective cooperation in trade, border, investment and all the other areas of mutually beneficial activities.
- Initiatives to resolve cross-border issues and undertake joint projects, such as production and distribution of electricity, gas, coal, fertilizer and other products on a win-win case basis.
- Participation in the grand Asian Highway System.

Chapter 7

AGRICULTURE AND RURAL DEVELOPMENT: STRATEGY FOR FOOD SECURITY

7.1 Background

Provision of food security is a constitutional obligation. It involves the physical availability of food at all times and its access to all at affordable prices. Seventy per cent people live in rural areas and draw their income and employment from agriculture and related activities. Food security is ensured through an optimal level of stock, adequate purchasing power to all (including to poor and disabled people), undertaking special programmes for subsidized food marketing (e.g. OMS) in poverty and disaster prone areas in times of scarcity and maintaining a public food distribution system.

Agricultural land is limited and is reducing at 1 per cent per annum. Modern methods of production, including water resource management, high yielding drought and submergence resistant seeds, increase in land productivity through efficient irrigation, flood control and drainage, are among the key factors in achieving a higher level of self-sufficiency in food production to feed the ever increasing population and to save foreign exchange for food imports. Availability of fresh water has been contracting due to its use for irrigation and electricity generation upstream in India. Water resource management has thus become a matter of critical importance. Future growth in agricultural production will depend, among other things, on increase in irrigation efficiency, which has been elaborated in the next chapter.

Despite a spectacular increase in food production, Bangladesh has faced persistent challenges in achieving food security due to (a) natural disasters and consequent crop losses; (b) fluctuations in food prices caused by volatility in the international markets; (c) failure to steady maintenance of domestic stocks; (d) inept monitoring of markets to prevent syndication that creates an artificial scarcity of food items and increases prices; and (e) absence of income generating activities that add to the purchasing power of poor people.

7.2 Crops Sector

7.2.1 Progress

The crop sector accounts for 12 per cent of GDP, 60 per cent of the agricultural value addition and occupies over three-quarters of the cropped area. Rice production tripled from 11 million tonnes in 1972 to 32 million tonnes in 2009. The other major crops are jute, wheat, potato, rapeseed/mustard, pulses, chillies, onions, vegetables, sugarcane, tobacco, tea and cotton. Jute is showing signs of re-emergence in the global market. Over 80 per cent of the increase in cereals production came from the expanding output. Maize production has been increasing in an agro-ecological environment and has been a feed for the expanding poultry industry. Potato and vegetable production has also made good progress.

7.2.2 Challenges

- Rice production must increase by over 300,000 tonnes annually to feed the additional population.
- Growth-induced demand due to high income elasticity, according to the National Commission of Agriculture Report (unpublished), will mean a 3.1 per cent increase in demand for food crops for every 7 per cent growth in GDP.
- With the decline in soil fertility and loss of land and water resources as well as a spread in the contamination by arsenic of drinking water, agronomic techniques should be used to increase water efficiency towards a System of Rice Intensification.
- Producers continue to face low harvest prices, because of market intermediaries and because large farmers capture most of the farm surplus for speculative price release during dry periods.
- Large and middle-sized farmers are abandoning farming in favour of non-farm activities leaving cultivation of land by marginal land owners, *bargadar* (share-croppers) and agricultural labourers.
- In the absence of meaningful land reforms and due to a shortage of savings, there is very little incentive to private investment to increase productivity and production.
- Pragmatic and proactive policy measures such as input subsidies and price support, diversion of electricity for rural irrigation, availability of highly concessional agricultural credit mainly through the public sector banks, have all helped to bring the country to near self-sufficiency in food production. Most other food items such as wheat, pulses, edible oils, onions and sugar, which account for nearly 10 per cent of the imports bill, will have to be imported.

Table 7.1: Production and Demand Projection of Rice (million tonnes)

Rice	2007/08	2015	2021
	60% YGM ²	60% YGM	60% YGM
Total Production	30.7	35.39	36.81
Total Demand	-	28.8	32.8

Table 7.2: Production Projection of Some Crops

Crop	Production Projection (in million tonnes)			Minimization of yield gap (per cent)
	2007	2015	2021	
Wheat	0.84	1.16	1.4	50
Potato	6.65	8.76	10.34	80
Oilseeds	0.36	0.45	0.52	70
Pulses	0.20	0.26	0.31	25
Maize	1.35	1.63	1.85	70

7.2.3 Strategies

- Achievement of self-sufficiency in the production of rice.
- Diversification of agricultural crops by adopting a system based on dissemination of information on agro-ecological zoning to identify areas suitable for different crops.

² YGM – Yield Gap Minimization. Demand projection assumes an annual population growth rate gradually getting to 1.2 per cent and reduction in income elasticity of demand for rice from 0.31 to 0.20.

- Priority attention in planned crop intensification in the coastal zone, the Sylhet region and the char areas in the northern *monga* region.
- Ecologically favourable, February-November, maybe devoted for growing high-profit non-rice crops leaving the remaining eight months for growing two rice crops, Aman in particular.
- Motivate farmers to use recommended/balanced doses of chemical fertilizers, extensive production and use of organic fertilizer, and proper utilization of soil guide and soil testing facilities to enhance soil fertility.
- R&D for productivity increase yielding up to 20 per cent higher production of hybrid rice through technological progress, stress tolerant varieties (salt, submergence and drought tolerance for rice as well as heat tolerance for wheat) will be developed.
- Exploring reduction in yield gap for existing technologies and better seeds, efficient management of seed beds and adoption of the System of Rice Intensification (SRI), involving young seedlings, one seedling per hill, larger spacing, alternate wet and dry irrigation, use of compost/farm yard manure and direct seedling.
- Steps will be taken for distribution of khas land to the landless and the marginal farmers easing the rental system, computerized land records and transfer, safeguards against eviction of the *bargadars* and granting them the right of pre-emption in land transfer.
- ICT for extension will be widely used for regular weather forecasts through TV, community radio and cell phones. SPARSO will be strengthened.
- Increase of storage capacities by building additional capacities, 50,000 tonnes by 2015 and 1 million tones by 2021 may be explored to facilitate safe storage of rice and perishables.
- Production and marketing cooperatives may be formed and concessional credit given to facilitate the growers purchase their own output during the harvest season and release to the market throughout the year; this will reduce the growers' dependence on the middlemen.

7.3 Fisheries

The Bengal delta comprising Ganges, Brahmaputra and Meghna flood plains is the world's largest flooded wetland, containing more than 800 species of fish. Bangladesh is amongst top ten fish producing countries of the world. About 2.8 million ha of land remains waterlogged for more than four months. This vast flood plain currently remains under-utilized for fish production. Fisheries meet nutritional needs, generate employment, and promote exports. 30 per cent of women in coastal area maybe directly or indirectly engaged in small fishing, including pond aquaculture.

7.3.1 Progress

Fish production has increased rapidly since the 1990s through (a) pond aquaculture (fish raised in ponds) using hatchery-reared fish fingerlings; and (b) conversion of fish ponds by raising embankments around low-lying lands. Embankments are also used as orchards and vegetable gardens. However, production under capture fisheries has stagnated because of underinvestment in fishing in the flood plains. The fish habitat in rivers, creeks, and canals has been reduced steadily by siltation and drying of the perennial water bodies. Fish hatcheries in coastal areas have expanded to suboptimal levels. The landless and marginal farmers affected by shrimp culture will be accommodated in a strategy of small holder aquaculture with greater attention to hazards from cyclone surges and tidal bores.

7.3.2 Challenges

Fisheries products have high income elasticity of demand. The Report of the National Agriculture Commission projected that demand for fish will grow at 4.7 per cent between 2000 and 2010, and by 4.1 per cent from 2010 to 2020. Since fish production lags behind the increase in demand, the price of fish products has risen more quickly than other prices, widening the disparity in fish consumption, both at the interpersonal and the urban-rural level.

Small-scale pond carp poly-culture, along with Chinese carps and small indigenous species, will continue to be the largest source of production and offer the greatest growth potential with high returns to labour and significant value addition. Commercial intensive pond culture will possibly shift away from pangash to carp poly-culture or other systems. The major constraints for large operators are a lack of large contiguous pieces of land and scarcity of high quality feeds. Rice-fish culture is likely to increase to 4,000 tonnes. Poaching, pesticide use and water management issues are significant constraints, however. Pen culture has become increasingly popular, with projected targets of some 20,000 tonnes of fish. It does, though, entail high risks from loss of stock resulting from net damage, poaching or predation.

Shrimp (bagda) production has significant growth potential given continued international market access. Improved culture systems, spatial expansion, better operational management, support of extension, better pond construction, effective water management, reduction in PL mortality, enhanced stocking ratios, and most importantly, improvement in post harvest handling will help higher shrimp production and exports.

Prawn (golda) production is likely to follow past trends of strong growth. Golda will require further area expansion and can be grown in any fresh water pond, though hatcheries require saline water. Golda can be included in carp poly-culture systems, although a bottleneck exists in the lack of marketing outlets outside traditional producing areas.

Table 7.3: Projection of Fisheries Production

	Area (thousand ha)	Production (thousand tonnes)		
		FY08	FY15	FY21
Inland open water	4,237	1,060	1,690	1,764
Closed water bodies	528	1,006	1,409	1,761
Marine	...	498	566	614
Total fish production	...	2,563	3,665	4,139
Total demand	...		3540	3,910

7.3.3 Strategies

- High priority given to closed water fisheries production.
- Increasing fresh water, (rather than brackish water) golda production in coastal areas.
- Potential use of cage culture in flood plains, with individual ownership.
- Emphasis on supply of inputs and promotion of technical knowledge among the educated youth, in pond and other closed water bodies.
- Adoption and implementation of the concept of fishermen cooperatives towards *Jaal jar jala taar* in government-owned water bodies.

7.4 Livestock and Poultry

There has been significant growth in the livestock sector, much of it coming from the commercial poultry sector. Rising population, moderate growth of per capita income and higher income elasticity of demand for livestock products are likely to bring a further increase in the demand for livestock products. The demand for milk, eggs, and mutton has increased by 6, 5.2, and 5.6 per cent respectively which is well above national average in the past. These rates are well above the national production/consumption growth rates. But growth in the consumption of poultry was relatively close to the projection, i.e. 4.41 per cent per annum. Annual growth for sheep and goat will be about 2.00 per cent. Based on a per capita daily milk requirement of 120 gm, the total demand for milk in 2002 was estimated at two and half times the country's production level. Bridging this huge gap is a major challenge.

7.4.1 Technical Constraints of Livestock Production in Bangladesh

Livestock density in Bangladesh is one of the highest in the world. The number of cattle and goats remain fairly constant, or is declining, according to the Agricultural Censuses of 1960, 1977, 1983-84 and 1996. However, poultry population is increasing. Production of livestock can be increased if nutritional constraints, parasitic constraints, infectious diseases such as foot and mouth disease or Peste de Petits Ruminants is controlled effectively.

Low Productive Genotype: Carcass yields in Bangladesh are 70-100, 7-8 and 7-8 kg respectively, for cattle, goat and sheep. This is very low, for good financial return. Similarly, average milk yields from indigenous cows range from 1-2 kg/d. Crossbreeding of indigenous dams with Jersey sires to improve milk production is ongoing. However, crossbreeding with beef sires to improve meat yields should also be considered.

7.4.2 Opportunities for Increasing Livestock Production

The nine most critical areas for livestock development in the country are i) dairy development and meat production, ii) poultry development, iii) veterinary services and animal health, iv) feeds and animal management, v) breed development, vi) hides and skins, vii) marketing of livestock products; viii) international trade management; and ix) institutional development for research and extension. The most important agricultural stakeholders are the *kishan-kishanis*, who must be reached effectively by agricultural research and extension services.

Small poultry farms successfully combated contagious diseases, such as bird flu, to some extent in their production of broilers, but failed to control it for production of layers and eggs. In this context, expansion of veterinary services including vaccination is essential.

Table 7.4: Growth rate and projection of livestock and poultry population (millions)

Species	Agricultural Census	Agricultural Sample Survey	Projection		
	1996	2005	2010	2015	2021
Bovine animals	22.30	25.14	26.85	28.47	30.73
Sheep & goat	14.61	17.47	18.27	19.78	21.41
Poultry	126.67	188.40	208.72	231.45	239.85

Strategy Breed development, feed production and supply, extension and supply of veterinary services, including vaccinations, shall be promoted.

7.5 Forestry

7.5.1 Sector Issues

Forestry Prospects: Recorded state-owned forest land (not necessarily supporting tree cover), and potential forest/tree growing areas, has been identified at 7 million acres, which is 20 per cent of the land area. Trees are reported to cover 12 per cent of the land where considerable prospects for improvement exists.

Ecological Imbalance: Ecological balance and bio-diversity conservation are in critical state. In Hill forests, the most common problems are erosion, over-exploitation and loss of soil fertility. In mangrove forests, the main problems are poor water and pests and in the mixed broad-leaved/bamboo forests, erosion and over-exploitation. In the plantations, the key environmental problems are loss of soil fertility, erosion, over grazing, flooding, poor water and drought.

Productivity: Productivity per unit of time or area is unacceptably low. This is largely due to social and institutional constraints, such as economic activities that neglect the basic needs of local people who then sought revenge through deliberate forest damage. Potential productivity has been marred by lack of technological innovations and administrative limitations. The major deficit is in the fuelwood sector, which is met by using agricultural residue and dung. The scope for social forestry and agro-forestry will be emphasised.

Substantial Forest Area: Being located in the tropical geographical belt and a deltaic formation in the confluence of the world's largest river systems, Bangladesh is endowed with fertile alluvial soil, a favourable climate for rapid tree growth and high output of tree products. A 20 per cent productive forest cover under intensive cultivation will be established and sustained.

7.5.2 Targets, Policies and Strategies

Target 20 per cent productive forest cover by 2021.

Policies: Increasing the tree cover on 2.84 million hectares designated for forest, diversification of tree species to sustain ecological balance, increasing employment from forestry (particularly for women) under expanded social- and agro-forestry, reverting cow dung to use as organic fertilizer and obtaining fuel wood from forests, giving priority to the creation of a coastal green belt and increasing accountability and transparency in public forest management. The government may seriously consider withdrawing forest management from the Forest Department and turn the forests into participatory social forestry areas for more efficient and productive management, and to sustain an ecological balance.

Strategies: Increasing productivity; higher efficiency; a bias towards agro and social-forestry; sustaining ecological balances; and strengthening the Sundarbans as a barrier between the sea and the South Asian landmass.

7.6 Rural Development and Institutions

7.6.1 Rural Development Process

Rural development is a process that encompasses the entire gamut of techno-economic and socio-political changes to relevant public and private efforts designed to increase the well being of rural people. The principal aspects of rural development are concerned with (a) poverty eradication and equity; (b) agricultural non-farm industrial development; (c) HRD; (d) employment generation through SMEs; (e) development of transportation, including roads, bridges and culverts; (f) equitable income and wealth distribution; (g) rural empowerment; and (h) participation of local people in planning and implementation of development projects for efficiency and equity.

7.6.2 Rural Institutions Conducive to Rural Development

Bangladesh may claim to have experienced the development of a plethora of rural level organizations in the last half century. Rural development in Bangladesh has seen the use of numerous models and approaches, including the Comilla BARD, IRDP, and Comprehensive Area Development Programme (1975). Their primary objective was to study and evaluate the viability and effectiveness of organising marginal farmers and landless labourers into small groups of their own to improve their socio-economic status through productive activities.

NGOs: Voluntary and private organizations, or NGOs, were major players in rural development activities, including those oriented towards development of income and employment, health and sanitation, agriculture and rural crafts, vocational education, relief and rehabilitation, family planning, mother and childcare. A dominant NGO approach to rural development involves poverty eradication through small scale credit to organized groups of rural poor and landless people – the micro-credit, or micro-finance, model. Many NGOs have developed a national and international reputation, notably, BRAC, Proshika, Manobik Unnayan Kendra, ASA and Rangpur-Dinajpur Rural Service. The Grameen Bank, a pioneering specialised micro-financing institution, set up as a government NGO, has earned particular recognition. However, the micro-credit revolution has not been effective in poverty reduction. The model has been criticized for lack of transparency and accountability and for family-type closed management in a very high interest rate culture.

7.6.3 Strategy for Rural Development

- Establishment of a powerful autonomous local government body is imperative to initiate and provide coordination among private and public rural development institutes.
- Revival of the Local Government Commission may be necessary.

7.6.4 Rural Non-Farm Activities (RNFA)

The rural non-farm sector is reported to account for 40 per cent of rural employment, and more than 50 per cent of rural income. In 2021, the rural labour force aged 15 years or more will reach 48.8 million. Out-migration will be not an option for everyone, and urban centres cannot be assumed capable of providing adequate livelihood opportunities for all those unable to make a living in agriculture. This implies that rural non-farm activities are a potential vehicle for poverty reduction in rural areas. With the current labour force participation rate, there will be a need to provide or create additional jobs for about 19.8 million people in the rural labour force by 2021. Government will need to create a framework conducive for the development of the rural non-farm sector through (a) business development; (b) escalating women's participation; (c) improving market access and infrastructure; (d) standardization and quality assurance of marketable products; (e) targeting vulnerable rural populations and scaling up their activities; and (f) increasing budget allocation to rural areas, and (g) implementation through a strong autonomous local government.

Linkages between Farm and Non-Farm Sectors: Non-farm activities will follow agricultural growth, and depend greatly on local and regional demand. For example, the Green Revolution acted as a driving force for small-scale industrial expansion in rural India and China. A rise in farm income will stimulate the consumption of goods and services, many of which will be produced by rural non-farm enterprises. Growth in rural non-farm activities will, in turn, reinforce agricultural production through lower input costs, technological change, and the ploughing back of profit into farming.

Measures for Improving RNFAs: Policies are needed to engage a wider range of institutions working in collaboration with each other, including cooperatives, NGOs, local financial institutions, and the private sector. Government will need to promote gender-responsive entrepreneurial development in SMEs in rural areas, facilitating their access to financial and non-financial services in agro-processing and agro-business, improving their access to markets, and creating a supportive institutional environment.

7.6.5 Marketing Agricultural Products

In Bangladesh, small, medium, and even large farmers are vulnerable to the exercise and influence of market power by rural traders, wholesalers, retailers, and processors. They are poorly rewarded for their efforts and the risks they take in an environment of inadequate quality control, gross returns as well as increasing product wastage.

Suggested interventions for marketing

- Encourage the establishment of collection centres/packing houses for sorting, grading and packaging.
- Develop markets for agro commodities for both local and export markets.
- Utilize huge water bodies for fish production and link them to urban markets.
- Develop packaging materials for agro-commodities in consultation with stakeholders for export markets.
- Help establish cold storage facilities at wholesale markets.
- Establish cooperative warehousing facilities at village/union level.
- Develop modern testing facilities and arrange accreditation so that consumers can be assured of product quality.
- Develop awareness campaigns on SPS and quality assurance systems.
- Develop training for the exporters on rules and regulations for international markets.
- Help create markets and competitiveness at every stage of marketing.

7.6.6. Rural Credit

Resources must be infused into the rural economy to strengthen the base of the national economy. While the large majority of the population of the country lives in rural areas, the rural economy also supplies food for all and raw materials of processing industries, and provides markets for services and industrial goods.

Rural credit is a key vehicle in this regard. The government has been taking steps to expand and strengthen rural credit. During the fiscal 2009-10, agricultural credit of Tk. 12,000 crore is being distributed, which is substantially larger than in the preceding year. At the initiative of Bangladesh Bank, the banking system, mainly Krishi Bank, Rajshahi Krishi Unnayan Bank, and BRAC distributed the amount. The momentum will be sustained in future, with increased supplies of credit and wider coverage of farmers.

Private commercial banks have started providing agricultural credit, as encouraged by the government, although the amounts provided are very small. But this is a good sign and their agricultural loan disbursements should expand in future.

The Small Farmers' Development Foundation has been established as an autonomous institution by the government to provide micro-finance to small and marginal farmers in Bangladesh. This may facilitate adoption of innovative technologies.

However, problems remain with regard to targeting, timely delivery, proper utilization of funds, and collection. The recent steps taken by the present government of issuing identity cards to farmers and enabling them to open bank accounts with a deposit of only Tk.10 (Taka ten) can help overcome these deficiencies. Also monitoring will be improved. There will be flexibility, as appropriate, by way of, for example, rescheduling repayments at times of devastations caused by national disasters.

Banks are being called upon and encouraged to increase their SME loans in rural areas. The SME Foundation will provide rural SME credit and other conduits of rural SME funding will be established.

There is now a large number of micro finance institutions (MFIs) in the country, which have expanded their operations phenomenally over the past two decades or so. This is a major and expanding source of rural credit. But given the manner of its operation, questions are now being raised whether the effective interest rates are too high; benefits, in terms of net profit, of the borrowers are too low or even negative in cases. Other issues such as whether access to assets, health, and education is increasing; and sustainable employment is occurring need to be addressed. The Micro Credit Regulatory Authority should, in consultation with all stakeholders, sort out these issues and help improve the micro credit operations for genuine benefit of the borrowers.

The Palli Karma Shahayak Foundation (PKSF), is now working to find ways of getting out of conventional micro credit and redesigning the credit instrument to promote household-based sustainable employment generation, poverty reduction towards its eradication and ensure socio-economic progress. This approach will be encouraged.

It appears that an appropriate and feasible option in extending the benefits of institutional credit to the landless poor will be through cooperatives with the support of rural institutions and major NGOs – unless the commercial banks establish an appropriate system of credit delivery to the poor with adequately equipped personnel. The management of cooperatives, including KSS, will have to be improved and equipped to serve the landless rural poor.

Strategies to pursue

- Expansion of retail banking for small farmers, by incorporating successful features of financial intermediation for small clients (e.g. character-based lending in lieu of group lending), using local agents to assess credit worthiness, monitor performance and enforce contracts; decentralized decision making and performance-based remuneration system; non-traditional collateral (e.g. borrower's trustworthiness and character) and dependence on social hierarchies (e.g. elected local representatives) for contract enforcement.
- Increase surveillance of NGOs in terms of their accountability, transparency, high interest rates, inappropriately designed weekly recovery, nepotism-prone management, and political causes. The NGO Bureau needs to be further strengthened to improve accountability.
- The Microcredit Regulatory Authority may have to be made independent of the government and of the NGO influence as originally envisaged.

7.6.7 Cooperatives

Cooperatives in Bangladesh have pioneered the introduction and administration of rural credit programmes involving farmers. Initially, three tier and subsequently both three and two tier cooperatives were formed to channel government-financed rural credit, which played a vital role in increasing agricultural production, especially of winter crops. Considering the increasing importance of rural institutions as viable platforms for service delivery of, for example, subsidies, agricultural input support, credit support, technology transfer and marketing of agricultural products, the formation of restructured village based multipurpose cooperatives may be a good option. Therefore, the aim of the policy shall be to streamline cooperatives to achieve an effective rural financing and support service delivery system, especially in agricultural marketing, production and storage of fruits and vegetables, milk and SME based products.

Chapter 8

Water Resources Management

8.1 Introduction

Water has many uses, with agriculture the foremost user. The other main water using sectors include industry, forestry, fishery, inland navigation, and domestic use including for drinking. The approach is, therefore, guided by the concept of integrated water resource management, aimed at optimizing water development and the way it is allocated to its various users.

The National Water Policy 1999 and the National Water Management Plan 2004 provide policy and action guidelines. For participatory water governance, the Guidelines for People's Participation in Water Development Projects were adopted in 1995.

8.2 Bangladesh's Water Sector

Bangladesh's water sector is characterized by abundance of water during the rainy season (June-October) and scarcity of water during the dry season (January-May, particularly March-April).

In an average rainy season, some 20-30 per cent of the country is flooded, that rises to two-thirds or more during severe floods. According to the National Water Management Plan 2004, the estimated wet season demand (both consumptive and non-consumptive) for water is about 142 BCM against an average surface water availability of 850 BCM. Unfortunately, due to the flat topography of Bangladesh, storing this excess water is not possible.

In the dry season, leaving aside the non-consumptive demand of in-stream use (56 per cent of the total water demand), the dry season water demand is overwhelmingly dominated by irrigated agriculture (32 per cent). National Water Management Plan projections show that all types of demand for water is expected to increase, but it is needed most of all for irrigation.

It is also important to note that Bangladesh has no control over the annual run-off flowing through the country into the Bay of Bengal, as over 92 per cent enters the country from beyond its borders. All the country's 57 transboundary rivers (54 coming from India, and 3 from Myanmar) Bangladesh is the lower riparian. There is a Water [Sharing] Treaty only in respect of the Ganges so that water planning in Bangladesh faces much uncertainty in relation to water availability during the dry season. Thus, while internal water governance is extremely important, cooperative regional water management is also crucial for Bangladesh.

8.3 Irrigation

The demand for water for irrigation is the greatest and the fastest growing. Water holds the key to agricultural development, especially for food crops such as rice. Innovations in mechanical irrigation have led to a rapid expansion of irrigated agriculture in Bangladesh. The total irrigated area by all modes of water abstractions has increased from about 3.6 million ha in 2000 to about 5.1 million ha in 2008, with groundwater accounting for 80 per cent or more of that. The country has 7.6 million ha of land suitable for irrigation and it is estimated that optimal use of water resources can potentially cover around 7.0 million ha. So, an additional 2 million ha can be brought under

irrigation if appropriate schemes are developed and implemented. According to the NWMP, demand for irrigation is expected to increase by 25 per cent to about 20 BCM between 2000 and 2025 – and that under a best case scenario for irrigation efficiency. The goals for the irrigation sector include:

- Expand irrigation in greater Sylhet and the southwest region;
- Increase irrigation efficiency to 50 per cent from the current 30 per cent;
- Effectively address the overwhelming dependence on groundwater, focusing on increasing the use of surface water;
- Increase the irrigated area from 5 million ha in 2009 to 7.6 million ha in 2021 by using water saved from improvements in irrigation efficiency;
- Monitor the quality and quantity of groundwater through continuous surveys and investigation.

But there are challenges to achieving these goals, which include:

- **Water scarcity:** There will be less water available for irrigation in future, so water efficiency needs to improve. Efforts will also be made to augment flows through trans-boundary rivers by negotiating and undertaking joint actions with neighbouring countries – for example, with India and Nepal over the Ganges.

The growing scarcity and competition for water for diverse uses may dramatically change the way water is valued and utilized, and the way it is mobilized and managed.

- **Climate change:** Bangladesh agriculture is likely to be adversely affected as a result of the ongoing global climate change. Appropriate adaptation measures therefore need to be developed through research and put to use widely over the Perspective Plan period.

8.4 Climate Change Impacts

Climate change is complicating matters by causing major changes in seasonal and spatial patterns of water availability, as well as a deterioration in water quality (through salinization, for example) and disturbance in hydrological processes. The likely increasing future impacts of climate change heavily affect the water sector, with corresponding implications for the various water using sectors. It is essential to design and implement effective adaptive activities with a view to minimizing the impacts of climate change.

8.5 Water Resources Management Strategies

Given the characteristics of Bangladesh's water sector, water demand, and the likely climate change impacts, the major Perspective Plan strategies include:

- Follow the IWRM framework for best allocation of water to various uses;
- Encourage research and development in designing appropriate adaptive activities to manage climate change impacts on and through the water sector;
- Encourage research on crop varieties that are water efficient and resistant to salinity;
- Focus on surface water irrigation and stabilize a reduced use of groundwater;
- Increase irrigation efficiency and reduce wastage and losses through better technology and better management;
- Encourage greater use of rainwater and its local storage for use in the dry season;
- Develop and implement efficient and effective measures to improve the knowledge gap of farmers on Farm Water Management technology;

- Examine large-scale O&M activities in embankments and polders to prevent salinity intrusion along the coast, and identify and implement the best option for the purpose; undertake desalinization activities;
- Rehabilitation of coastal embankments to help adapt to climate change;
- Protection of river erosion of water courses and enhancement of land reclamation;
- Undertake planned and phased dredging and river training activities;
- Examine the government's water sector agencies and institutions and, if necessary, redesign, reorient and further equip them for more effective implementation of policies and strategies;
- Negotiate with India for equitable water sharing arrangements for all transboundary rivers, particularly major rivers;
- Mount efforts to improve cooperation on flood and drought management with other co-riparians, to the benefit of all the countries, including Bangladesh;
- Actively seek cooperation with India and Nepal in augmenting the dry season Ganges flows and their equitable sharing, as provided for in the Ganges Treaty between Bangladesh and India; and
- Work to promote cooperation among co-riparians of the transboundary rivers for basin-wide river management for the mutual benefit of all.

Chapter 9

ENERGY SECURITY FOR DEVELOPMENT AND WELFARE

Electricity is an essential ingredient for both economic and social development. Its consumption is synonymous with modern life in the industrially developed world. Communication, transportation, food supply and preservation, housing, offices and establishments, mills and factories all depend on adequate supply and availability of electricity at an affordable price. Electricity must therefore be supplied dependably and at a reasonable price. Therefore the prerequisite for the country's progress is the electricity supply compatible with demand, in a dependable manner at a reasonable price

9.1 The Present Electricity Situation

The country appears to be in a power and energy crisis. The present electricity crisis is manifest in costly load shedding. The stalemate over the use of fine quality coal available in the country is yet another aspect of this power and energy crisis.

The crisis has, however, been neglected. The demand for power has increased, but its generation has not. Small power plants have been installed though in private sector.

Reform programmes to resolve the emergency, and development of the power sector are in progress. Foreign funds have been made available to implement the programme for reform. This fund is financing Power Cell.

Current Issues

- Matching supply and demand for electricity;
- To ensure energy security for all;
- To reduce the consumption of natural gas, thereby releasing gas for use as fertilizer, or to increase the use of coal for electricity production to release gas for alternative use;
- Finalization of the coal extraction plan;
- Reasonable cost-effective price policy for gas, coal and electricity, these being under government control;
- Energy mix for electricity generation;
- Energy conservation;
- Promotion of renewables;
- Efficiency of the power sector; and
- Reduction of system loss.

The Strategies, Constraints, and Possibilities of the Sector

Strategies

- To diversify the use of primary fuels, such as gas, coal and liquid fuel, for power generation;
- To have provision for dual fuel in power plants wherever possible;
- To increase power generation through renewable sources, such as solar, wind, small hydro;

- To implement nuclear fuel based power plant;
- To finance power generation projects through, for example, Public-Private Partnerships, government funding for IPP;
- To increase sector efficiency, reform measures must be implemented.

Constraints

- Absence of adequate public and private investment in power generation;
- Absence of Cost Reflective Tariffs;
- Absence of Primary Fuel Supply Chain.

Possibilities

- Coal-based power plants using domestic and imported coal;
- Ruppooor Nuclear Power Plant;
- Availability of new gas both offshore and onshore;
- Public-Private Partnership Projects;
- Prospect of participation of local investors in the sector.

9.2 Energy Security and Electricity for all by 2021

Objectives and Targets of the Power Sector in the Perspective Plan:

<i>Vision 2021 targets for electricity production</i>	
Electricity generation in the country by 2013 :	8500 MW
Electricity generation in the country by 2015 :	11,500 MW
Electricity generation in the country by 2021 :	20,000 MW
Electricity for all by 2021	

The government's Power System Master Plan (2005) projects that 62 per cent and 72 per cent access to power will be achieved in FY-2012 and FY-2014 respectively, with relatively lower installed capacity.

Objectives during the Perspective Plan

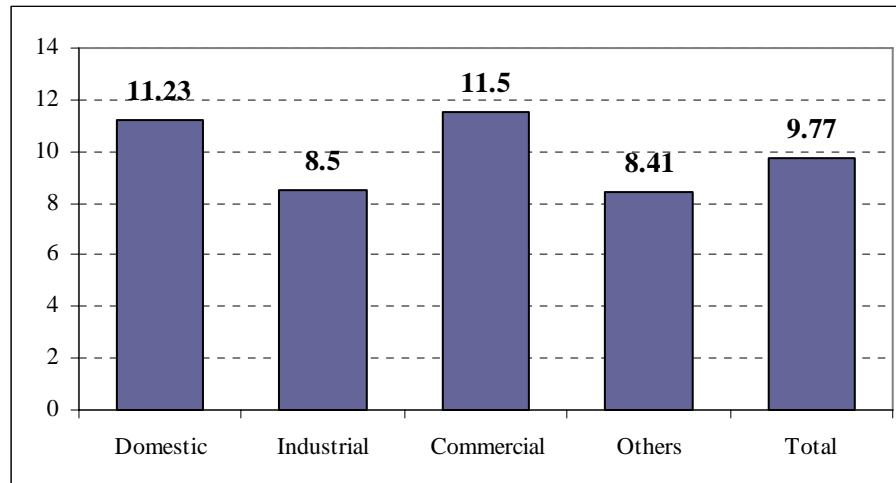
The following objectives for the sector have been envisioned:

- To ensure energy security,
- Making the power sector financially viable and able to facilitate economic growth;
- Increasing the sector's efficiency;
- Introducing a new corporate culture in the power sector entities;
- Improving the reliability and quality of electricity supply;
- Using natural gas, coal and oil as the primary fuels for electricity generation;
- Increasing private sector participation to mobilise finance;
- Ensuring a reasonable and affordable price for electricity by pursuing least cost options;
- Promoting competition among various entities.

9.2.1 Demand for Electricity

Electricity is the cleanest source of energy. Demand for electricity rises as income rises and as people desire a better quality of life. Overall, it has risen exponentially at about 10 per cent. Demand from residential and commercial consumption has risen most quickly (Figure 9.1).

Figure 9.1: Annual Rates of Growth (%) of Power Consumption by Sector, 2000-07



There is one other aspect to this demand that has remained virtually unnoticed. The intensity of use of electricity has risen tremendously over time. In the early 1980s, it stood at about 30 GWH per thousand crore taka of GDP. This increased to over 80 GWH by 2002. The change in the structure of GDP in favour of manufacturing and services, as well as rapid urbanization and wasteful consumption, are among the major reasons for the increase.

With an average 12 per cent rate of growth, generation should double about every six years. That means that by 2021, the need for gross generation shall be more or less four times the present demand. In December 2009, the installed capacity of power plants was 5,803 MW and the de-rated capacity was 5,250 MW. In these circumstances, the Vision 2021 figures, i.e. 20,000 MW of power generation by 2021 and 11,500 MW by 2015 are the minimum that should be accomplished.

Government sponsored projections on power demand are given in the Gas System Master Plan 2006. The Master Plan has three scenarios of power generation growth. Assuming GDP growth rate of 4.5 per cent, 5.2 per cent and 8 per cent, the Master Plan projects power demand to be 12,424 MW (low case), 14,934 MW (base case) and 27,377 MW (high case) respectively.

Efficient energy use: Energy saving bulbs are already in the market. Future energy saving household gadgets and equipments may have the potential to reduce electricity consumption. Energy is not a crisis in Bangladesh alone. It is a world crisis.

Under the circumstances, the figures of Vision 2021, i.e. 20,000 MW of power generation by 2021 (which is around 600 kwh per capita consumption, compared to 146 kwh in 2007) may be acceptable. This will indicate a power generation development growth rate of around 10 per cent over the period of the OPP. This may be considered respectable for a sector that has been playing truant over the last decades.

9.2.2 Supply of Electricity

In order to achieve these goals in the Vision 2021 period, governance of the sector has to be strengthened, keeping efficiency and integrity at a very high level, and limiting political interference as far as possible. The sector is highly import-dependent for its machinery and maintenance equipment. They are expensive and demand much high-technical inputs in an oligopoly market situation, which is certain to raise questions of appropriateness and the propriety of procurement processes.

Power supply has consistently lagged behind demand in recent decades. Bold decisions have to be made on procurement of power plants. Principles on the pricing of electricity have to be based on the true alternative cost of gas, the main input for electricity generation. Maintenance and depreciation of the plants and machinery must also be considered. Corruption in distribution must be addressed. In seeking to achieve double-digit GDP growth, private investment including FDI has to be depended on. Also in the Investment Climate Assessment, the availability of an even flow of electricity at competitive price figures prominently.

Balanced Generation, Transmission, and Distribution

In power sector planning, there should be a balanced growth of generation, transmission and distribution capacities. Even within the regime of generation, the availability of gas or coal should be taken into consideration.

There is a long list of projects and programmes under implementation or negotiation that could increase the generation, transmission, and distribution of electricity. These would be better considered under the Sixth Five-Year Plan. Generation of electricity is mainly related to non-renewable energy consumption (coal, gas, and others). As a result, the emission of greenhouse gases, such as carbon dioxide, increases environmental degradation and pollution. But more power for development is needed; therefore, saving power as well as renewable energy for future generations is needed. To increase energy efficiency and capacity, a switch from non-renewable energy sources to renewable energy sources (e.g. solar, wind, small-hydro, geo-thermal, tidal, and wave energy) should be a strategy. The coastal belt area may offer a good source of tidal and wind energy.

9.3 Contribution of the Private Sector to Power Generation

Within the purview of the Private Power Generation Policy, independent power producers began private sector power generation from 1998-99. Purchasing rental-based power started in 2007 to cope with the power crisis. Gas-based power generation capacity through small power plants and rental power plants seems poised to increase. The generation of power by the PDB may be kept on hold for lack of gas. Some analysts fear that in this way public sector power generation might become restricted or obliterated in the future. A uniform monitoring system for the power projects' procurement is necessary.

Private sector power generation could be encouraged to supplement that of the public sector. Presently the private sector accounts for almost one-third of the country's power generation. This high proportion has developed as a result of severe shortages in power generation by the public sector.

Table 9.1 Public and Private Sector-wise Allocation of Generating Capacity of Plants

Sector	Public Sector			Private Sector					Total
	PDB	Company	Sub total	IPPs	SPPs	RPPs (3 yrs)	RPPs (15 yrs)	Sub total	
Capacity (MW)	2522	796	3318 (66%)	1271	189	138	114	1712 (34%)	5030 (100%)

Public private partnerships may be considered. This could help to keep private sector price increases within reasonable limits, assuming that public sector representatives' efficiency and integrity can be ensured. Its best contribution could be initiatives led by the private sector to

predict power demand and plan generation accordingly, thereby helping to ensure energy security. This will also reduce pressure on the government budget.

9.4 System Loss

System loss of more than 4 per cent in power generation is not acceptable. It has been stated that average system loss of power generation by the PDB is 6.35 per cent. Expenditure on operation and management of power generation in the public sector averages about 20 per cent. As the operating capacity of the PDB is about 50 per cent of its installed capacity, so this expenditure is really closer to 40 per cent. For IPPs, this expenditure is 11.12 per cent. The amount of de-rated power due to lack of proper repair, maintenance and rehabilitation is 553 MW. There is no investment, and no plan, for improvement of these plants. Again, some plants belonging to the PDB are inefficient, because they continue to operate beyond their normal working life, which makes for excessive gas consumption per unit of generated power. The lack of gas also increases the cost of power generation.

9.5 Cost of Electricity

The preceding discussion shows that the purchase, operation, and maintenance of plants at the generation stage, and system loss and power purchase from private sector, will lead to increased spending on generation and consequent higher cost of power supply. Ultimately, the price per unit of electricity needs enhancement. While some enhancement will be necessary in the immediate future, causes for the increases in cost shall be examined and corrective measure taken.

Much of the PDB's loss is attributable to rental power, in addition to its own system loss. A strong Energy Regulatory Commission will have to address these issues.

9.6 Energy Mix and Bangladesh

The present energy mix in Bangladesh is compared to global position is shown in Table 10.2.

Table 9.2: Present Energy Mix in Bangladesh Compared to Global Position

Energy	Bangladesh		Global	
	Current	2021	Current	2030
Gas	87.5%	30%	18%	28%
Oil	6%	3%	10%	5%
Coal	3.7%	53%	37%	38%
Hydro	2.7%	1%	17%	4%
Nuclear	0%	10%	17%	19%
Renewable	0.5%	3%	1%	6%

About 88 per cent of the country's power is currently generated from gas and about 50 per cent of the consumed commercial energy is used for power generation. A more balanced fuel-mix will be needed to ensure energy security.

Coal: Although 37 per cent of global power is currently generated from coal, the contribution of coal in Bangladesh's power generation is very meagre at only 3.7 per cent – and this despite Bangladesh wealth of coal reserves. There is little scope for additional power generation from gas.

Therefore, there is no alternative than to depend on coal for future power generation. However, even under the present electricity and energy crisis there is no evident initiative for generation of electricity using coal. Only in Barapukuria are there two units, with a joint generating capacity of 250 MW. The surplus coal available in the coalfield there can support another 125 MW power plant – but that plant has to be established. Coalfield development has been suspended, because of a lack of an approved Coal Policy. Bangladesh is finding it difficult to develop a coal policy, a challenge that must be addressed.

The country's coal reserves remain largely unexploited, because of a lack of planning. Power generating capacity should reach 20,000 MW by 2021 to meet the projected power demand. Presently, gas can contribute just 3115 MW to power generation. Bangladesh can easily meet its energy demands until 2021 from coal reserves. The estimated coal reserve for Bangladesh is 3300 million tonnes in Barapukuria, Khalashpir, Phulbari, Jamalgonj and Dighipara fields.

Carbon-trading: In line with the urgency of the Kyoto Protocol, there are procedures for reducing carbon emissions through carbon-trading. Countries that emit more carbon dioxide than agreed have an opportunity to compensate for that extra use. This involves financial transactions that emit more than the agreed amount of carbon dioxide and those that use less. Reports suggest that, in 2008, this type of carbon trading was worth US\$ 92 billion. Bangladesh's carbon trading projects may result in an annual reduction of about 300,859 tonnes of carbon emission. Therefore Bangladesh could earn US\$ 5,415 million per year through carbon trading, giving developed latitude to consume additional fuel that produces 300,859 tonnes of carbon. Bangladesh may consider calling upon the international community to assist in providing 1 kwh of power daily per family as part of an international development effort to provide power to some of the 90 million people currently without electricity in Bangladesh. This would be in addition to the planned increases in income over the coming years, which will also contribute to further electrification in Bangladesh.

Gas: There has been both optimism and pessimism over Bangladesh's gas resources. Even in February 2009, it was said that Bangladesh might have the potential to become a major gas producer and a supplier to what is a vast potential regional market. Bangladesh also could use its natural gas resources to power vehicles with Compressed Natural Gas to help alleviate air pollution problems in the major cities, and in response to high petroleum prices, to produce electricity, petrochemicals, and fertilizers, which it could use both within the country and for export. There is widespread household use of gas. There had been an impression that Bangladesh was floating on natural gas, but it is now understood that Bangladesh's known gas reserves are sufficient to meet national demands until 2019. One estimate of gas availability is as follows:

- Norwegian Petroleum Directorate/Net Proven Reserve 16.3 Tcf.
- US Geological Survey/"Undiscovered Reserve", Additional 32.1 Tcf.

There are estimates calculated by other agencies. They vary, but do not show satisfactory ratios of current production to net reserves or net reserves to demand projections. It is widely felt that Bangladesh's gas resources should first be used for domestic purposes, such as electric power generation, fertilizer production, and transportation. There is more pressure for greater use of coal for electricity generation, releasing gas for very many other economic uses.

There is also a popular demand to restrict future exploration and drilling for gas to national organizations, while offshore drillings may be allocated to international companies.

9.7 Non-traditional Energy/Renewable Fuel

Other sources of energy

The power generated from renewable sources is now 1 per cent of total power generation in the world. This it may reach 3 per cent in 2021. The power now generated in Bangladesh from renewable sources is only about 20 MW, which is some 0.5 per cent of the total energy mix. Provided that foreign investment becomes available to implement a renewable 500 MW power generation project by 2021, its share in power generation may then reach 3 per cent. Bangladesh is currently negotiating with the Russian Federation over nuclear energy. The outcome, in terms of production by 2021, is somewhat premature. But on the positive side, nuclear power plants capable of producing up to 2000 MW are envisaged. Solar energy, hydroelectricity, bio-gas, ethanol from zatropa seeds, windmills, and other sources of renewable energy will be explored as the use of hydro-carbon based fuels reduces.

The prospects for **hydroelectric power** generation in co-operation with Nepal, Bhutan and India are not too bright in the coming decade, but deserve to be explored further. A 20-year hydro-power development plan is planned for the Himalayan region, including Pakistan and India. This plan will be implemented by the year 2027. It is thought that through regional cooperation this hydro-power will be the prime regulator in meeting the regional power deficit. But there is little possibility of this power contributing to the regional grid by the year 2021.

Solar energy has real prospects in Bangladesh. In the long run, solar energy appears to have an unlimited supply. Research and experimentation, including wind power, should be encouraged. The prospect of developing ethanol as a viable fuel may not be so good, given land scarcity. A vibrant economy and explore and research these forms of renewable energy. The government will also take advantage of clean development mechanism policies to secure external funding in energy efficiency, development of alternative sources of energy and enhancing carbon storage capacity. The feasibility of using wind energy requires correct wind flow mapping for the whole year for the whole country.

Power Imports

The export of electricity from Bhutan to India, or cross-border power export/import between India and Nepal, are worth exploring further. Myanmar has satisfactory gas reserves. Bangladesh could negotiate power imports from Bhutan or Nepal or gas import from Myanmar. But Bangladesh has yet to be able to fund the purchase of sufficient electricity at commercial rates to adequately meet demand. However, import of power lines from the border areas of the neighbouring countries may be considered, particularly in relation to the power crisis in border zones. The cost of imported power from Myanmar is likely to be affordable. Bhutan with her enormous hydroelectric potentials is exporting huge quantities of electricity to India. Bangladesh could negotiate with Bhutan for some of that exportable surplus.

9.8 Fuel: Oil, Gas, and Coal

The objectives of the oil and gas sector/sub-sector in the Perspective Plan period (2010-21) will include:

- Increase the reserve base and production of gas through accelerated exploration, appraisal and development of gas fields, production augmentation and optimization of recovery. The transmission and distribution network will be developed in line with that.
- Give priority to the conversion of probable and possible reserves to proven ones and also to converting delineated gas resources into reserves.

- Reduction of system loss, both technical and non-technical, and improvement of end use efficiency.
- Creating equitable development opportunities through gradual expansion of gas pipelines to southern, western, and northern areas of the country.
- Improving the security of petroleum product supplies.
- Privatization plan for the LNG like liquid fuel sector.
- Popularization and expansion of domestic LPG use to discourage new domestic gas pipeline connections.
- BPC will prioritize the enhancement of its import/refining, storage and distribution capacity.
- To meet energy demand, efforts will be made for regional energy security through mutual cooperation in addition to exploring internal sources.

The current situation on commercial energy consumption

At present, commercial energy consumption of Bangladesh is 68% for commercial energy supplied by indigenous Gas, 26% for imported oil and coal; 5.4 % for indigenous hydro-electricity. Therefore, the availability of gas and coal assumes considerable importance. Present consumption of coal is mainly limited to generation of electricity from plant and brick burning (which are mostly imported). It would be unwise to depend exclusively on gas for generation of electricity. The demand for coal will increase significantly in electricity generation, and will increase moderately in brick burning and in other areas.

Regional distribution of energy and production of LPG

The present production of gas in the country is about 2,000 MMcft. Efforts should be taken to supply more LPG to the western part of the country.

Production of gas by public and private sector

Over the last three years, the private sector's gas production has increased phenomenally, jumping from about 20 per cent to more than 50 per cent. While this has greatly helped to increase supply of gas, it has also created a significant burden/pressure on the financial position of Petrobangla and a dependence on the private sector – even though the public sector has much higher gas reserve.

The growth of demand for gas

The demand for gas for power generation has risen in recent years, while demand for fertilizer rose until the mid 1990s. Since the mid 1990s, the consumption of gas by the fertilizer industry has remained largely static. All other sectors have experienced rising trends. The fastest growth in demand of natural gas is from industry, with an exponential annual increase in demand of about 13 per cent, which means that demand is doubling in slightly more than every seven years. The average annual rate of growth for the whole period for domestic use is around 12 per cent, and according to this pace, demand for natural gas for domestic use will double by around eight years.

Table 9.3: Average Annual Growth Rates of Natural Gas, 1991-2007

Sector	Average growth rate (%)
Power	8.2
Fertilizer	3.9
Industry	12.6
Domestic	12.0
Total	7.7

The country has 22 gas fields, of which 13 have producing wells and three have suspended production. Six fields have not yet started production. The total reserve (proven and probable) is 28.40 Tcf of which the total recoverable reserve, according to latest estimates, is 20.50 Tcf. Of this recoverable reserve, by December 2009 is 8.73 Tcf has been extracted, leaving a maximum of

11.77 Tcf to be produced. On the basis of availability and the probable demand scenario, gas shortages are expected soon.

While sustained energy supply is a prerequisite for economic development, estimates indicate a gap in demand and supply of gas. The current average daily gas production is about 1970 Mmcft against the actual demand of 2200 Mmcft resulting in deficit of around 230 Mmcft per day. Considering the current trend of increasing gas demand, the projection for FY 2019-20 is estimated at 4567 Mmcft per day. The expected demand may reach 5.6 billion cubic feet by 2025. As the current reserve (11.77 Tcf) is not sufficient to meet the increasing demand, strengthening of exploration, development and transmission network expansion is necessary.

There are prospects of discovering more gas in the country. Some reports suggest a 95 per cent probability of finding at least 8.43 Tcf of new gas discoveries. The maximum that may be discovered are respectively 65.7 Tcf (with 5 per cent probability) and 64 Tcf (with 10 per cent probability). The mean expected discovery level (with 50 per cent probability) is 32 Tcf. Overpressure has been observed in many gas wells, which may be indicative of further large hydrocarbon pools in Bangladesh.

Energy Conservation:

Energy conservation is one of the most important issues of the sector due to economic and environmental reason. However, until very recent past no serious attempts were made to take up and implement energy conservation programmes which has been given due importance in the National Energy Policy of Bangladesh (1996).

9.9 Strategies

- Serious efforts must be made to keep energy supply in line with the rapidly increasing demand.
- Construction of power plants must proceed, and contract negotiations must be transparent and accountable.
- Private sector involvement in electricity generation shall take account of the cost price aspect in relation to the public sector.
- The energy mix shall make more use of coal, if necessary imported coal, in the short and medium term. Nuclear energy must be explored.
- Priority will be given to regional cooperation for the import of electricity.
- There must be a deliberate policy of energy conservation.
- Pragmatic approach will be taken for exploration, production and utilization of natural gas and accordingly implement short, medium, and long term programmes.
- As the energy sector is highly import-oriented, transparency must be assured, including through parliamentary oversight.

Chapter 10

BUILDING PHYSICAL INFRASTRUCTURE

This chapter deals with the building of physical infrastructures, i.e. urbanization, transport and telecommunication. Building urban infrastructure, such as townships, roads, rails, and inland water transport, promotes economic development, employment creation and poverty reduction.

10.1 Urbanization

Concentration of economic activities in the major cities of Bangladesh, particularly in the mega cities of Dhaka and Chittagong, and lack of economic infrastructure in rural Bangladesh, has resulted in rapid and sprawling urbanization. An inexorable urban pull attracts people living in the countryside to move to urban places. There is also a rural push that contributes to urbanization. Unequal land distribution, landlessness, high unemployment rates, and natural calamities including river erosion, have strongly influenced migration to cities in Bangladesh. This trend needs to be reversed through policy interventions. Rural development and rural non-farm activities through SMEs and a deliberate policy of dispersion of industries may help to lower the rush towards urban areas. The speed of urbanization has been alarming. It has grown from 5 per cent in 1961 to 25 per cent in 2005. It is projected to grow further to 38 per cent by 2021.

Bangladesh is not the most urbanized country among the newly industrialised countries of SE Asia (Korea, Indonesia, Thailand are more urbanized), yet it cannot afford to be complacent, particularly given the limited land area available and the increasing population. Bangladesh will seek a balance between urban and rural areas through policy interventions. While the rural population of about 10.78 crores will start to decline with effect from 2021, it will take about 15 years (to 2035) to approximately balance the urban and rural populations.

10.1.1 Challenges of Urbanization

In Dhaka, increasing traffic congestion and more accidents, scarcity of utilities, air and water pollution, scattered garbage, lack of sanitation, inadequate water supply, lack of open space or children parks and playgrounds, inadequate schooling or public libraries, law and order problems, lack of recreation facilities, meagre footpaths that are often occupied by vendors, ubiquitous slums throughout the city, and a large number of beggars characterize the road and traffic environment.

10.1.2 The Goals of Urbanization for the Period up to 2021

- To reduce burdens on the urban environment and to make cities liveable through provision of better urban amenities.
- To disperse the population among other towns and growth centres and satellite townships;
- Transform slums into legitimate communities.
- To improve the lives of poor urban people and promote equity.
- To strengthen urban governance.

Targets

- Establish four satellite towns around Dhaka.
- Establish compact towns in several areas of the country.
- Acceleration of policy decentralization of power and functions towards effective urban governance.

10.1.3 Strategies and Policies

Urbanization is inevitable – and even helpful – for development. An urbanization and urban development policy must have realistic goals, and be integrated into the national economic development plan. A sense of urgency has to permeate efforts to address the challenges and opportunities exhibited by urban transition. The following strategies will be followed.

Stabilize urban concentration: The government will promote the spatial distribution of population and future planning for township development will follow this principle. Migration controls, land use planning, investment in satellite cities, special economic zones, controls on industrial location, significant progress in improving quality of rural life, careful provision and pricing of modern services, attention to remove traffic congestion have been considered and tried. The impact has been inadequate, due largely to inconsistency in policies, lacking institutional capacity, coordination, and resources.

Energize economic and social development: An employment generating development strategy and a strong resolve to regenerate the rural economy through a micro, small and medium enterprises strategy supported by renewable energy (solar and biogas) can weaken the forces of pull and push and inhibit rural to urban migration.

Promotion of small towns: Dhaka, the capital, has become a mega city. This has brought substantial pressure to bear on the limited infrastructure. Small urban centres have to use amenities in the absence of basic services, inadequate new investment, and entrenched poverty. The inability of local bodies to raise revenue is a major problem. Given the condition of many smaller towns, it is hardly surprising that many migrants prefer to move to a bigger city, even if they have to live in overcrowded and unhygienic slums. In the long run, the pressure on bigger cities can only be stemmed if there is fresh investment in the smaller urban centres.

Balanced urbanization and satellite towns: Well-distributed urban growth is beneficial not only for the less developed areas of the country, but also for the population in existing metropolitan complexes, because it helps to limit the increase in their cost of living.

One strategy for the government to consider is the development of compact towns with arrangements for these to criss-cross the major corridors of urban and industrial growth which link the large metropolitan cities. These could be in line with the proposed four **satellite towns** around Dhaka. Another addition to future ideas could be developing rural areas in the format of a town main street with provisions for urban amenities for the households, thereby reducing the cost of present unplanned homestead buildings, while keeping arrangements for farmyard, cattle and poultry rearing. This will save land from the development of scattered homestead building.

Provision of housing for the poor: Another important area for any national policy-plan on urbanization is the housing of the poor. The concept of 'an urban village', a place with fixed boundaries, may help to address the challenges of low-income housing. Such a village would have one market, one clinic, one station on the transit, several primary schools and several bathing and washing facilities. A housing policy should be binding on all urban authorities in different parts of the country. Such a national policy should also provide for the conservation and improvement of housing stock in any town or city.

Curbing environmental pollution: The fight against environmental pollution is a further aspect of an urbanization policy. It is necessary to have a national plan as well as enforcement authorities, to make pollution control effective to the extent that industry (e.g. tanneries in Dhaka) is decentralised or moved from the heart of the city. EIA is very important to abate the negative impacts of infrastructure development on environment. Also enforcing environmental pollution control standards for noise and exhaust emission must be emphasised for clean environment.

Devising effective urban governance: Effective urban governance can provide sufficient space to city corporations, municipalities, upazila centres, neighbourhoods, and communities. It also involves enhancing the capacity of city and local authorities to partner with the private sector and civil society in delivering services and promoting economic development. Governance issues in these cities are critical. Parallel with decentralization and local government reform initiatives, effective sector reforms in such areas as land, housing, water, sanitation, education, and health have to be undertaken. As lack of coordination among the activities of different organizations can create hindrance to proper urbanization, role of the relevant organizations need to be clarified and an effective mechanism developed to coordinate their activities.

10.2 Transport

Bangladesh's network of roads, railways, rivers, air services and ports has helped promote development. Their future roles are outlined in the Perspective Plan (2010-2021). The total number of passengers carried and freight moved in each form of transportation have experienced significant increases, although the rates of increase vary. Due to the massive development of the road network, the share of roads for passenger travel has increased over the years at the expense of railways and inland waterways.

10.2.1 Improving Roadways

The primary road network consists of national highways, regional highways and zila roads (former Feeder Road Type A). The network is constructed and maintained by RHD and total 21,571 km. The other roads – upazila roads, union roads and village roads – serve mainly rural areas, and are administered by the Local Government Engineering Department.

Strategies and policies

- Roads have received overwhelming attention in the past four decades, both in terms of coverage and allocation. Attention should be given to maintenance, especially routine and periodic, during the next 10 years.
- New road construction should be limited, because Bangladesh already has an extensive road network. However, new zila roads will need to be constructed to connect the 16 upazila headquarters.
- National Highways 1 to 8 should receive priority attention to ensure a high level of service, safety and quality. The Dhaka-Chittagong Highway (NH1) is to become a four-lane road. The other seven highways should gradually become four-lane by 2021. These roads can form part of the regional road network, as well as the Trans-Asian Road network facilitating trade between Bangladesh and neighbouring countries.
- To ensure balanced development across the country, there should be an adequate number of east-west connections. The 6.15 km long and 22 m wide Padma Bridge will serve southwest part of Bangladesh and improve the connection between Mongla Port and Dhaka. Its completion is scheduled for 2013.
- To check overloading of trucks and buses, weight bridges will be phased in to RHD roads. This will help prevent the damage of roads from heavy axle-loads and reduce the need for road maintenance.

Road Master Plan (RMP: 2010-24)

The RHD's Road Master Plan (RMP: 2010-24) includes the following important roads and bridges to be constructed by 2024:

- **4-lane roads:** Dhaka-Chittagong, Dhaka-Mymensingh (to Mawna), Dhaka-Bhariab, Bhairab-Moulvibazar, Habiganj-Sylhet, Dhaka-Tangail, Dhaka-Baniajuri, Jessore-Benapole, Chakaria-Chittagong, Baneshwar-Belephur.

- **Other important roads and bridges:** Mynamati-Brahmanbaria, Sylhet-Sunamganj, Bhatiapara-Narial-Jessore Road (upgrading), Dhaka Eastern Bypass, Dhaka Western Bypass, Chittagong Bypass, Hatazari Link Road, 2nd Meghna Bridge, 2nd Meghna Gumati Bridge; and the Padma Bridge.
- In addition, 13 other new roads, bridges (Padma 2) and upgrading to 4-lane roads have been identified.

Maintenance and other issues in the Road Sub-Sector

With the extension of the road network, the responsibility for maintaining a satisfactory standard for the network has become a challenge for RHD. Maintenance will be given importance to get maximum value from the investment in rebuilding. Routine maintenance will replace occasional maintenance.

Some 10,000 km of zila Roads are paved, while 3,600 km remain to be paved. Like the roads, bridges on the RHD road network need massive rehabilitation in the form of major repair or full/partial replacement, because a significant proportion has been damaged. Overloading of trucks and buses is putting excess pressure on the roads, causing annual damage of Taka 300 crore in the form of additional maintenance and rehabilitation expenses.

The design of recently constructed small bridges and culverts has not taken account of the country boats that ply the watercourses. As a result, the vertical and width clearances under these bridges and culverts are insufficient for the smooth movement of waterborne traffic.

LGED Roads

The objectives of LGED in construction and maintenance of roads are (i) to provide all-weather access to all growth centres, all union parishad complexes, most rural markets and other rural service delivery centres, and (ii) to improve rural accessibility to facilitate agricultural production and marketing.

The total length/number of rural infrastructure to be developed/improved beyond the length/number covered under the existing LGED projects and resource requirement for their development are given in Table-9.1

Table 10.1: Length/Number of Rural Infrastructure to be Improved

Component	Target Total Length/Number to be Improved
Upazila Road (to be completed by 2014-15)	
Road (km) Coverage	18,277 (100%)
Bridge/Culvert (m) Coverage	112,233 (100%)
Union Road (by 2019-20)	
Road (km) Coverage	33,818 (100%)
Bridge/Culvert (m) Coverage	125,267 (100%)
Village Road (by 2024-25)	
Bridge/Culvert (m) Coverage	216,957 (100%)
Growth Centre (no.) (by 2009-10) Coverage	1,041 (100%)
Rural Market (no.) (by 2024-25) Coverage	14,307 (100%)
Union Parishad Complex (no.) (by 2009-10) Coverage	2,979 (100%)

10.2.3 Improving Railways

Long-term Vision and Objectives

Bangladesh Railway (BR) is thrust sector of the Perspective Plan. The vision of BR is to create new growth momentum to contribute to development, e.g. poverty reduction through securing railway properties, expanding and improving service quality and performance. BR will provide safe, reliable, effective and efficient rail transport services, and will foster international rail links to serve regional/sub-regional connectivity and TAR. It will establish e-governance, introduce modern technology such as a metro rail, electric train, and circular rail lines to provide better service to commuters. Railways will play a major role in mass transportation of goods and passengers, and will contribute to future poverty reduction.

Objectives

- To expand and improve the railway system to provide safer, better, a more environmentally friendly and cost effective transport facilities to the national and international traffic.
- Rehabilitate, upgrade/improve and replace old and obsolete assets in favour of building safe, fast and reliable means of quality transportation.
- Augmentation of line capacity along selected corridors, acquiring modern locomotives, coaches and wagons.
- Increasing market share in freight transport, in container transport between Dhaka-Chittagong Port and in passenger transport.
- Organizational reforms introducing a modern financial management system, improved maintenance and operational system and human resource development.
- Establishment of Chittagong – Cox's Bazaar Rail route.
- Reduction in traffic congestion in Dhaka city.
- Introduction of rapid transit between Dhaka and the proposed satellite townships.

Strategies to Revamp BR

- Structural reform to infuse dynamism and professionalism.
- Priority to be given to railways over other forms of transport.
- Improvement of workshop facilities for efficient and quick rolling stock resumption services for locomotive replacement and overhauling.
- Recruitment and training of skilled staff including mechanics, locomotive masters, maintenance, and all other categories of staff by 2021. The Railway Training Academy at Chittagong will have skilled instructors, modern equipment, and facilities.
- By 2021, all routes should be dual gauge so that meter and broad gauge trains can operate effectively between the East and West Zones.
- Identification of main corridors (e.g. the Dhaka-Laksham chord will shorten the Chittagong-Dhaka route by 60 km, and cut travel time by one hour).
- Commercialisation and, in some instances, leasing out to the private sector on-board services to maximize revenue in a vastly improved service delivery.
- Timely running of trains should be emphasised. Train schedules and times should be strictly enforced.

Targets Specific activities have been targeted to be accomplished during the Perspective Plan and are shown in table 10.2.

Challenges for the sector/sub-sector

To minimize excessive operation time and costs and in the interest of safety and realization of maximum revenue, 74 per cent of the locomotives and 28 per cent of passenger coaches (which are beyond their economic life) must be replaced. The signalling system has become obsolete and

will be modernized and upgraded. Through a vastly expanded, dynamic, vibrant, and commercial BR including the connectivity to the TAR, BR will be a major revenue earner and will contribute to socio-economic development.

To create opportunities and attract more private sector involvement for the railways, separation of infrastructure from operation, in the light of the National Land Transport Policy and the Integrated Multi-Modal Transport Policy will be considered.

Table 10.2 BR's Targets

Activities	2015	2021
Expand railway network, undertaking new rail line construction, re-opening of closed lines, and related infrastructure.	931 km	120 km
Undertake dual gauge of track and construction of new bridges connecting North with South and East.	213 km and 3 bridges	267 km and 2 bridges
Rehabilitate and upgrade existing rail lines	1,402 km	1,000km
Undertake remodelling stations and construction of new stations, improvement of level crossing gates, construction of one ICD and improvement of other infrastructure.	5 stations, 824 level crossing gates, 1 ICD at Dhirasram.	10 stations, 1500 nos. of level crossing gates
Undertake procurement of new DE locomotives	186 (146 MG & 40 BG)	75 (30 MG & 45 BG)
Undertake rehabilitation of DE locomotives to enhance availability and performance of locomotives and to ensure train reliability and punctuality	143 nos.	120 nos.
Procure passenger coaches	450 nos.(300 MG & 150 BG)	450 nos.(300 MG & 300 BG)
Rehabilitate passenger coaches	560 nos. (400 MG & 160 BG)	600 nos. (300 MG & 300 BG)
Procure wagons and improve wagons	1,403 nos. & 377 nos.	2,000 & 1,500
Modernize station signalling system to ensure safety	113 stations	30 stations
Undertake line capacity improvement, procurement, and procurement of new DEMUs to reduce road traffic congestion and other mass rapid transport system in Dhaka	74 km and 20 nos. DEMU/DHMUs	320 km and 32 nos. DEMU/DHMUs
Organizational reform of BR	Reorganization following LOB principle	

10.2.4 Improving Inland Waterways

Potential exists for a virtually stagnant Inland Water Transport to play a significant role in the movement of people and freight. About one-eighth of the rural population has access to the transport system only through IWT. That compares favourably with access to road transport, as only 37 per cent of the rural population live within two kilometres of an all-weather road. The road network is 274,000 km long compared to only 24,000 km for waterways.

Objectives of IWT

- To improve day and night navigation of water craft by providing navigational aids.
- To develop an inland container river port for transportation of containers by waterways to/from two sea ports and one deep sea port (at Sonadia);

- To develop river port handling and storage facilities, and introduce mechanical equipment to handle cargo in order to save waiting time for berthing of vessels.
- To develop rural launch landing stations by providing pontoon facilities for smooth embarkation/disembarkation of passengers and loading/unloading of cargo.
- To improve capacities to provide services to traveller and freight transportation.
- To introduce digital systems for hydrographical charts, pilot services and traffic management.

Broad Policies

- To ensure that waterways can be used throughout the year, steps should be taken to double all-season routes from the present length of 3,600 kilometres through dredging by BIWTA/Water Development Board and the private sector.
- Enforcement of safety regulations to reduce the number of accidents and create a positive image. Increase and development of human resources should drastically reduce major accidents and eliminate fatalities to zero by 2021.

Strategies

- Intensification of the dredging programme by procuring dredgers to develop channel conditions of inland waterways. Smooth navigation of water craft will be ensured through navigation aids.
- Establishment of inland container river port on priority basis.
- Priority upgrading of port facilities (both cargo and passenger) and storage facilities for prompt vessel loading/unloading, mechanical equipment will be introduced for handling of cargo in place of head-load system.
- Implementation of projects for traditional country boats to be replaced by boats powered by mechanised engines.

Objectives of the Port Authority include

- Maintain and improve the navigational channel through capital dredging and regular maintenance dredging.
- Develop efficient inland distribution of container traffic by road, rail, and inland water transport to relieve the congestion and long travelling time at Chittagong Port.
- Expansion of terminal/yard facilities and improvement of operations through the acquisition of modern container handling equipment and procurement of harbour crafts and vessels.
- Urgent establishment of ICDs/CFS at all potential cargo distribution centres across the country.
- PPP in port management and port development infrastructure through a BOO/BOT model using a clear, transparent policy guideline.
- Improve institutional capability for training, planning, safety, and environmental control.

Challenges to IWT

Lack of Navigability: Quick provision of dredgers in BIWTA and BWDB to improve BIWTA's capabilities to ensure navigability of waterways. Private sector involvement in this task will be encouraged.

Launch Accidents: An effective licensing and inspection system will be introduced to reduce the number of launch accidents and fatalities.

Low IWT Tariff: The tariff for carrying goods by IWT will be rationalized in line with the road and roadways transportation of passengers and cargo. IWT is also a more environmentally-friendly form of transport than road transport, and could save up to 155,000 tonnes of CO₂ per year from lower diesel consumption.

IWT Major Component of Transport: More than half of the total land area of Bangladesh lies within 10 kilometres of a navigable waterway. Country boats are environmentally and employment friendly and should be encouraged through appropriate incentives.

10.2.5 Air Transport

Air is the main mode of international transport. Air cargo services can assist in quick transport of exportable perishable goods, such as fresh vegetables and frozen shrimps. It can be an attractive vehicle for international and national tourism.

Targets

- Second runway in Hazrat Shahjalal International Airport for cargo planes.
- Second international airport near Dhaka.
- Expanded runways at Chittagong and Sylhet.
- Greater accessibility for foreign carriers.

Strategies for air transport

- Upgrading facilities and air security measures to an internationally acceptable level.
- Buildings near the Hazrat Shahjalal International Airport that pose risks to air navigation should be identified for appropriate medium to long term remedial measures.
- Bangladesh can take advantage of congestion in Bangkok and Singapore by constructing a new state-of-the-art airport in Dhaka, possibly at Trishal/Shakhipur with a two-level road connectivity.
- The private sector can be encouraged to lease unused airports, such as Shamsernagar and Thakurgaon, for operation and maintenance.
- Private sector involvement in air services has brought positive changes to the country's air transport and should be continued to 2021 and beyond.

10.2.6 Rural Transport

It is important to give attention to ways that the rural transport infrastructure, particularly the physical infrastructure, can support rural economies.

Rural roads: Roads, waterways, or both serve most of rural markets and growth centres. upazila roads (formerly, Feeder Road Type B) connect growth centres to the RHD road network or to the upazila headquarters or connect one growth centre with another. Union roads connect union headquarters with the upazila headquarters, and local markets with each other, while village roads connect villages and farms to local markets and union headquarters. All these roads, along with waterways, are important for the efficient functioning of rural markets. Access to markets will encourage improvements in market facilities.

Strategies: The strategies may be adoption of a Rural Road Master Plan and Maintenance Plan with priority accorded on maintenance over new construction; more involvement of LGIs and ensuring utilization and maintenance of constructed facilities.

10.2.7 Transport Scenario in Dhaka

Dhaka's transportation system struggles to cope with the demand of an increasing population. It is characterized by congestion, high pollution levels, high numbers of accidents, and high user costs. The increase in the number of inefficient modes, such as cars, in recent years has exacerbated the situation. The number of private cars has increased from 87,866 in 2003 to 1,15,880 in 2007.

Dhaka's roads struggle to accommodate the demands of their traffic. Traffic jams worsen when vehicles to park use one (or even two) lanes. Unlike most mega-cities, several forms of transport use Dhaka's roads. Each has different operational characteristics. Road users, such as cars, buses and CNG 'baby taxis' are not known for the respect they give either to traffic rules or to each other. Pedestrians, too, often choose to ignore the rules of the road.

A strategic transport plan for Dhaka city's transport system has been prepared. The strategic plan has proposed a number of short, medium, and long-term measures to cope with the city's traffic problems. Several measures have already been introduced, such as the construction of elevated expressways and a metro rail system. Effective interfacing is needed to integrate the various transport modes, so that users can transfer from one mode to another effectively and efficiently.

Targets

- Construction of an overhead monorail system and elevated expressway.
- Circular waterways around Dhaka city.
- Improved road safety and reduce traffic congestion.

Strategies/policies to improve Dhaka's traffic scenario

- Improving traffic management to optimise available road capacity.
- Increase in traffic management staff and vastly improvements in their operational efficiencies through, for example, appropriate equipment.
- A balanced and integrated transport system, in which use of rickshaws may be limited to specific areas and with strict enforcement of licensing rules.
- Travel demand management measures are proposed in the short and medium terms.
- An increase in the number of modern wide bodied buses on the streets of Dhaka as an efficient mode of transport. An attractive Bus Rapid Transit system should be introduced in the medium term.
- Explore the possibilities of a metro rail system to move a large number of people quickly through the main transport corridors.
- The creation of a "Pedestrian first Priority" system to protect the pedestrians and ensure safety for the road users.
- Eliminating non-licensed vehicles and discouraging unskilled drivers by revising the appropriately the system of licensing and testing. To improve both the quality of vehicles and drivers.
- Progressive taxation to encourage old vehicles off the road, introducing an entry fee to Dhaka city, strict enforcement of roadside parking fee, staggered office hours, higher road and income taxes on cars, localized school admission and upper level link at heavy congestion points can be considered.

10.2.8 Multi-modal Transport

Multi-modal transport has the potential to reduce transport expenditure and time. The modes should be integrated and the communication system should be improved to facilitate tracing the vehicles and sharing information among different stakeholders, such as importers/exporters, shippers, port authority and shippers. Computerised connectivity will improve communication, and adoption of the Digital Bangladesh policy will help further. Transport corridors, especially the Dhaka-

Chittagong Highway, should be upgraded to facilitate the movement of container lorries. In the long term, another ICD should be constructed in the periphery of Dhaka, at major river and road junctions. This ICD can assist in distributing freight to all parts of the country and be the focal point for multi-modal transport. Long distance, international transshipment of goods will take place automatically.

10.3 Telecommunication

The telecommunication sector has progressed significantly with the involvement of the private sector in the provision of mobile phones in the early 1990s. Yet, the teledensity remains lower than in neighbouring countries. The rural connectivity of some operators is still low. Teledensity in Bangladesh in 2007 was 1 per cent for fixed lines (compared to 4 per cent in India, 3 per cent in Pakistan, 14 per cent in Sri Lanka, 28 per cent in China, and 55 per cent in USA). Teledensity in respect to mobile subscribers in Bangladesh in 2007 was 22 per cent (compared to 21 per cent in India, 39 per cent in Pakistan, 40 per cent in Sri Lanka, 42 per cent in China and more than 100 per cent in Thailand, UK and Germany).

The costs of handsets, connection fees and airtime have reduced. The average mobile phone tariff fell from Taka 11.37 per minute in December 2001 to Taka 0.88 in June 2008. Costs and prices could be reduced much further, in line with rates in India and China. The oligopolistic market structure of the mobile phone industry is marked by over advertisement. Private operators have started to get involved not only in mobile phones, but also in land phones, removing BTCL's monopoly of the business.

The quality and coverage of the internet has also improved in recent years. Bangladesh is connected with the rest of the world through submarine cables owned by the Submarine Cable Co. and Very Small Aperture Terminals (VSAT). A second submarine line will be operational by 2015. Fibre-optic broadband connections have increased browsing speed. There are now more internet service providers, and their connection and monthly fees have fallen, but still remain beyond most people. Occasional internet users have the option to use cyber cafes. These cafes have opened the door to new business and employment opportunities. The internet is not only a gateway to a huge amount of information from around the world; it offers rapid communication through email. Worldwide Interoperability for Microwave Access (WiMax) technology has been issued a license by BTRC.

10.4 The Print and Digital Media

Like the telecommunications sector, the digital and print media have also advanced since the days of Bangladesh Betar and Bangladesh Television, which had a monopoly from 1972. The introduction of private television channels in 1997 has opened competitions and the quality of programmes has generally improved. A TV advertisement policy is necessary.

Radio is still popular in rural areas. As radios are cheap and do not require electricity, it is widely available in rural areas. Programmes, such as those with information on cultivation, can benefit farmers, and cyclones warning can help fisherman as well as residents of coastal areas. Radio again started to become popular among urban people, especially the young generation, with the introduction of FM channels since the middle of this decade. People do not need a separate radio, as they usually have FM radio as a standard feature of their mobile phone.

The print media has also come a long way. There are many Bengali and English dailies published today. Readers around the globe have access to newspapers' internet editions. People have wider choices and access to biased as well unbiased news. Bangladeshi nationals living abroad can update themselves on the news in Bangladesh. In addition to the dailies, there are many magazines specialising in specific areas, such as sports, show business, crime report, and education.

Strategies/policies proposed for the digital and print media

- Permission to a few of the present cable television channels for terrestrial broadcast rights, so that more people in rural areas can watch them.
- In the short term, the government may act conservatively in granting permission to new channels in order to check quality of programmes.
- For each channel, there should be some broadcast-time slots reserved for non-commercial educational programmes targeting rural people and students.
- Establishment of FM Radio news channels, in addition to entertainment channels.

10.5 Postal Service

In the era of electronic communication, the postal service may appear to be outdated. However, some aspects of the postal service make it hard to replace. For example, digital documents are still not recognised for legal purposes in most parts of the world, and this requires a postal service. People in rural areas may not have access to the internet and depend on the postal service. Hand written letters are still considered to possess a personal touch.

Bangladesh Post Office offers a range of postal services, including Express Mail Service for speedy and reliable mail service and an electronic mail service, e-post for internet and e-mail services. The Post Office also offers limited tracking of mail through the internet. The recent introduction of Post Office vans has helped the Post Office to reach the people, instead the people having to reach them. EMS and e-post services will be expanded in rural areas.

Strategies and policies for the improvement of the postal service

More urban areas should be brought under the Guaranteed Express Post for inland express mail service. Express Mail Service links should be established with most countries of the world. This service should be accompanied by a guarantee to deliver the mail within a specific period.

The Bangladesh Post Office has more post offices in rural areas than urban. While the number of urban post offices has remained the same, the number of rural post office has grown by 7 per cent. Increasing use of ICT will allow public sector postal services to survive in the long run.

Chapter 11

ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT

11.1 Introduction

Environmental and natural resources are the ultimate base of economic development. Also, with trees being the source of oxygen and the sink for carbon dioxide, and water being crucial for life, human life itself is dependent on the environment. The environmental efficacy deteriorates in both respects when the environment is degraded and the environmental balance disturbed through overuse, pollution, deforestation, and the consequences of greenhouse gas emissions. Environmentally sound development calls for actions to restore and maintain environmental health while pursuing socio-economic development. The process of economic growth, to be socially sustainable, must also be equitable. Such an integrated pathway is crucial from the perspective of longer term development sustainability and for leaving the environment, as inter-generational equity considerations demand, in such a state that the future generations can meet their needs.

11.2 The State of Bangladesh's Environment

The state of Bangladesh's environment is already very unhealthy and its degradation continues unabated. The major reasons for environmental degradation in Bangladesh include both behavioural (on the part of the citizens) and natural. The behavioural reasons include deforestation; pollution of air, water, and land through deposition of industrial effluents and solid and other wastes; cutting into hillsides causing destabilization in the surrounding areas; over-fishing; encroachment of rivers causing both pollution and narrowing of streams; conversion of wetlands into lands for agriculture and construction of buildings for various purposes; over-utilization of groundwater causing the water table to decline steeply and making the replenishment process increasingly inadequate in many parts of the country; illegal occupation of and construction on drainage channels in urban areas, particularly in Dhaka; land degradation due to unbalanced use of chemical fertilizers, other agro-chemicals and also as a consequence of monoculture; and population pressure on land and other natural resources. The natural phenomena include arsenic contamination of groundwater, floods, river erosion, drought, cyclones and storm surges, and salinity ingress in coastal areas.

Other major issues include (i) freshwater shortages during the dry season (January-May) mainly as a result of low flows through trans-boundary rivers due to large-scale upstream abstractions, with southwest Bangladesh (including the Sundarbans, a world heritage site) facing the most severe adverse environmental and economic consequences, and (ii) Ramsar sites, face a severe threat; and rising rivers beds, as part of the huge annual sediment loads (about 1.8 billion tonnes) from upper riparians remains on river beds, thereby causing waters to spill over the banks leading to floods even when real flows are still low.

11.3 Responses Being Pursued to Arrest Environmental Degradation

Most behavioural and natural issues are covered by The National Environment Policy 1992, The Environmental Conservation Act 1995 (amended in 2000 and 2002), The Environment Conservation Rules 1997, The Environmental Court Act 2000 (amended in 2002), National Policy on Safe Water Supply and Sanitation 1998, National Water Policy 1999, The Environment Pollution Control Ordinance 1977, Water Pollution Control Ordinance 1970, National Fisheries Policy 1998, The Forest Policy 1994, National Land Use Policy 2001, National Policy for Arsenic Mitigation 2004, and other related policy and strategy documents. But if necessary, policies, laws and rules may be modified or new ones enacted to address changing circumstances. But it is important to implement the provisions of the Policies, Strategies, Acts, Rules, and Ordinances effectively.

There are flood management, cyclone management, drought management, and coastal zone management policies and practices in place in Bangladesh. These are pursued more or less effectively. Cyclone management, particularly in terms of saving lives, using the warning-volunteers-shelters technology, coastal afforestation, building up of cyclone and flood shelter, introduction of Standing Orders on Disasters, effective search and rescue operation, have been very effective. Cyclone relief activities implemented by the government, CBOs, NGOs, and local people are often quite successful. But post-cyclone rehabilitation has been grossly inadequate. For example, large numbers of people affected by cyclone Aila in 2008 are still to be rehabilitated.

Flood management can be substantially improved through strengthened regional cooperation, by improving the capacities of communities to respond, and through effective implementation of Standing Orders on Disaster. Although the Integrated Coastal Zone Policy (2005) and Strategy (2006) have been developed, they are yet to be put to proper use. In drought management, increasing water availability through rainwater harvesting in ponds and other small reservoirs can be a useful measure; and negotiated equitable river sharing with India is another important issue to pursue.

The activities of various government and non-government organizations working in the field of disaster management and mitigation must be enhanced. The focal point for disaster management is the Ministry of Food and Disaster Management and the Disaster Management Bureau. The Bangladesh Meteorological Department (BMD) is responsible for forecasting natural disasters, particularly cyclones, droughts, and storms. The Bangladesh Space Research and Remote Sensing Organisation (SPARRSO) is responsible for providing satellite images while the Flood Forecasting and Warning Centre (FFWC) is entrusted with the responsibility of forecasting flood.

11.4 Global Climate Change and Bangladesh

The greatest environmental risks now arise from the intensifying global climate change which is adversely impacting both human and natural systems. Human systems include river and other water bodies, agriculture and forestry, coastal zones and marine systems including fisheries, human settlements, energy, and industry, insurance and other financial services, and human health. Natural systems include rainfall, glaciers, coral reefs and atolls, mangroves, boreal and tropical forests, polar and alpine ecosystems, prairie wetlands, and remnant native grasslands. The degradation of the environment in Bangladesh from human encroachment makes the impacts of climate change even more severe.

Global climate change is caused by global warming as a result of huge quantities of greenhouse gases emitted by developed countries over the past 150 years and more. The responsibility for climate change lies with those countries. Bangladesh and other developing countries have no

responsibility, although some large and fast growing developing countries are now fast increasing their greenhouse gas emissions.

Natural disasters such as floods, cyclones, and drought are becoming more frequent and devastating in terms of economic and infrastructural losses and damages and health hazards (outbreak vector- and water-borne diseases). As a result of rising sea levels, a significant part of the coastal areas may be permanently inundated, displacing large numbers of people; and salinization will be deeper and wider. Changing and shifting patterns of rainfall have already been experienced and may become much more volatile in future. Low rainfall will continue to cause drought, desertification in Barindra areas and inadequate groundwater replenishment in drier parts of the country. A large part of the rural economy, including the coastal areas, will be particularly affected by natural disasters. These will destroy crops, infrastructure, livestock, and economic activities. As a result, poverty may widen and deepen. There is a direct linkage between poverty and intensifying climate change.

It is now recognized internationally that Bangladesh is at the forefront of adverse climate change impacts. One key reason is the disadvantaged geographical location of Bangladesh at the bottom of the three mighty river systems—those of the Ganges, the Brahmaputra, and the Meghna, with a long coastal belt and much of the country low-lying and flat. The country has no control over its water resources as over 92 per cent of the annual run-off that flows through Bangladesh on to the Bay of Bengal enters the country from upstream outside the country. Another key reason is that Bangladesh is the most densely populated country in the world, except for few city and tiny states. Therefore, the per land unit impact falls on the largest numbers of people, who are mostly poor. In short, as a result of climate change, Bangladesh is likely to face increasing risks to food security, energy security, water security, livelihood security, health security, and habitat security.

11.5 Responses to Climate Change Impacts and Risks

The government has developed a strategy and mechanisms to respond to and address these risks. The core policy, strategy, and action thrusts have been outlined in the Bangladesh Climate Change Strategy and Action Plan, adopted in July 2009. Adaptation to the impacts is the main focus. The basic approach is to address economic development and climate change issues in an integrated fashion so that the resilience of the people is increased and climate change impacts managed through effective adaptive activities. A major emphasis is placed on disaster risk reduction.

Although not required to reduce greenhouse gas emissions given its status as a least developed country, Bangladesh is committed to following a low carbon path, provided adequate financial and technological resources are provided by the international community for both adaptation and mitigation. But Bangladesh will not compromise on the need for accelerated economic growth and poverty reduction. The current action plan focuses on six areas: (i) food security, social protection and health; (ii) comprehensive disaster management; (iii) infrastructure; (iv) research and knowledge management; (v) mitigation and low carbon development; (vi) capacity building and institutional strengthening.

However, both the strategy and the action plan will be reviewed as new knowledge and analyses are available, and modified as required.

A Climate Change Unit has been established in the Ministry of Environment and Forest, and Climate Cells are being set up in all concerned ministries. The Department of Environment has a crucial role to play and will be strengthened. All actors in the field of climate change will be required and facilitated to work within a coordinated framework. Monitoring at all levels will be established and

strengthened. A major emphasis will be placed on capacity building within and outside the government through training and access to appropriate technologies. The capacity of the Planning Commission in mainstreaming environment and climate change issues in the medium and long term plans for the country will be further strengthened.

11.6 Climate Change Management Strategies

The overall goal is to achieve a major breakthrough in environmentally sound and equitable socio-economic development within this Perspective Plan period. Major environmental and climate change strategies include:

- Steps to be taken to ensure that human activities that degrade environment are contained through awareness-raising and, if necessary, recourse to legal means.
- Appropriate strategies and actions will be pursued to contain population growth, which is crucial for shaping the future of the country, and certainly in the context of climate change management.
- Best utilization of the available land, arresting and reversing the land degradation process, is a major policy thrust. In this context, an integrated plan of action may be prepared. Also, especially for urban areas, further unplanned growth needs to be stopped and an urban renewal strategy formulated and implemented.
- Bangladesh is committed to conservation and enhancement of the country's biodiversity, which has been severely affected in terms of species losses and threatened species. The Biodiversity National Assessment and Programme of Action 2020 continue collection of information and analyses on the current state of biodiversity in the country and outline an action plan. Efforts to protect and enhance biodiversity will be strengthened.
- A major focus will be given to managing and improving sanitation in both rural areas and towns and cities. Both awareness-building and increasing the availability of required supplies (such as sanitary toilets) are part of the strategy to improving sanitation.
- In rural areas, the arsenic contamination of groundwater will continue to be addressed with determination. The urgent need at present is a comprehensive arsenic mitigation programme with a view to providing safe water to worst affected areas. Mitigation options include treatment of arsenic contaminated water, and increase the use of surface water sources. Deep aquifers appear to offer a long-term source of arsenic-free and safe drinking water. With rural electrification the scope of distribution of deep tube well water through pipes in the village may hold some promise.
- To improve navigability and water discharge, and to reduce flood risks, a strategy of dredging and training of rivers in a planned and phased manner will be pursued.
- Aforestation, particularly in coastal areas, is already a major thrust and will be strengthened in terms of strategic location and overall area covered.
- The policy of crop diversification will be strengthened and properly implemented, as it is economically sound and should help reverse the land degradation process.
- Integrated coastal zone management will continue to be a policy thrust. The Coastal Zone Policy and the Coastal Zone Strategy will be put to use, and may be revised and modified if necessary as the implementation process progresses. A major emphasis will be placed on desalinization of water and land.
- In adaptation activities both structural and non-structural measures, as appropriate, will be undertaken to protect the people and equip them at the same time to respond better. The option of O&M and rehabilitation activities for embankments and polders to prevent flood waters and salinity intrusion will be examined and the best approaches identified for implementation.

- Communities, particularly those to be affected most by extreme climatic events, will be the focus for capacity-building and mobilization. Their economic uplift will be promoted as an integral part of the process.
- For 2009-10 budget year, the government allocated 700 crore Taka (US\$100 million) for climate change activities, which is being utilized. The allocation will be increased in the coming years, as appropriate.
- However, more funding will be needed and will be sought to be mobilized from international sources. Since it is the developed countries that are responsible for climate change, and Bangladesh suffers from no fault of its own, climate justice requires that the developed countries provide necessary funds and technologies to Bangladesh, as also to other similarly placed countries, to enable them to mount appropriate responses to the intensifying risks from climate change. Hence, funds from bilateral development partners, of which there are already significant pledges, will be sought to be increased in future, as also will funds from the UNFCCC process. All these funds must be provided as grants and as additional to the required official development assistance.
- All necessary steps will be taken to utilize nationally and internationally mobilized funds properly and effectively.
- Regional cooperation will be pursued for more effective flood and drought management as well as for basin-wide trans-boundary river management. This will be mutually beneficial for all co-riparians including Bangladesh.
- Climate change management through regional cooperation has good potential for mutual benefit. The regional countries can learn from one another's experiences and pool resources and expertise to develop appropriate adaptive capacities. Regional countries may also work together to protect and enhance their collective common interests in international climate change negotiations.
- Adaptation must be the main focus for a country like Bangladesh; but unless mitigation starts immediately with drastic reduction of greenhouse gases, particularly by developed countries, climate change will continue to intensify with ever more adverse impacts, which will make adaptation increasingly difficult. If overall greenhouse gas emissions continue to increase, climate change may become unmanageable in 50 years' time.

Bangladesh's demand, therefore, is and will continue to be that the rise in global warming is kept at 1.5°C or well below 2°C and that the greenhouse gas emissions reduce accordingly within the framework of a binding global agreement on the basis of common but differentiated responsibility and respective capabilities.

Chapter 12

BUILDING A DIGITAL BANGLADESH

Vision 2021 makes use of the Digital Bangladesh strategy to highlight the tremendous capacity of information and communication technology to help steer the country's development during the Perspective Plan. The national ICT Policy 2009 has expressed its vision in terms of expansion of information and communication technology and its huge potential in establishing a transparent, committed and accountable government, to ensuring the development of skilled manpower, to improving social justice, to managing public services through private-public partnerships, and to raising Bangladesh' status to a middle income country by 2021. It is believed that through the successful implementation of ICT policy vision and principles, it will be possible to build a Digital Bangladesh as promised by the government.

12.1 Knowledge Economy

Talk of labour or capital intensity has now evolved into talk of knowledge intensity. In the 21st Century, comparative advantage will become much less a function of natural resource endowment (such as coal or iron) and capital-labour ratios; it will be much more a function of technology and skills. Natural physical endowment and history will play a much smaller role; human ingenuity, ideas and skill will play a much larger role.

12.1.1 ICT and Science and Technology for National Development

World over, science and technology (S&T) has become not only a way of life, but has been identified as an instrument of change, access medium to international markets and collaboration, weapon of competition and even of leapfrogging in the globalized world. Flood-resistant crops are a must for the country with chronic floods, dwindling arable land and rapidly growing population; low-cost housing material that can withstand different types of natural disasters; local production of medicines; indigenous alternative sources of power plays a determining role in economic development as well as sustainable development – all these cannot happen without S&T. Moreover, it is important to embed the strategy in the national policies that Bangladesh will be both a consumer of technologies and also a producer of them. With adequate production capacity and intellectual property ownership of production, the country will be able to break free of any whims and restrictive commercial plans of foreign multi-national companies. In this regard, national strategies will be devised to ensure that technology transfer schemes are in place between academia and industry, non-resident Bangladeshis and domestic counterparts, and foreign companies and local partners. The research and development by local scientists, especially leading to socio-economic development of the country and innovative solutions to man-made problems, will be promoted.

Bio-technology, nanotechnology, agricultural technology, energy and power technologies, medical technologies, light engineering, among other forms of non-ICT technologies must have prominent place in national project formulation, institutional development and capacity building. Appropriate technologies on which Bangladesh has created an indigenous capacity in several locations such as Jinjira, Dholai Khal, etc. will be promoted through capacity enhancement, investment linkage development and market promotion both domestically and internationally. It is imperative to recognize the role ICTs can play for knowledge management, collaboration on research and development, technology transfer and marketing of non-ICT technologies.

It is crucial to strike the right balance between science and technology in order to avoid overemphasis on the latter and underemphasis on the former in policy and in the education system particularly in the secondary and post-secondary levels. In fact, to reverse the trend that science education has been attracting progressively decreasing number of students in secondary, higher secondary and higher education, an overemphasis may be necessary for a limited period of time, on science education in the form of special incentives, recognition, further education and employment opportunities for students choosing the science stream of the education system. Special incentives may be considered to attract and retain more female students in this stream as well.

12.2 Information Revolution

The IT revolution has intensified the move towards knowledge codification, and increased the share of codified knowledge in advanced economies' knowledge stock. All knowledge that can be codified and reduced to information can now be transmitted around the world quickly and cheaply. Market transactions are facilitated by codification, and the diffusion of knowledge is accelerated. Codification is also reducing the importance of additional, duplicative investments in acquiring knowledge. It is building bridges between fields and areas of competence and reducing the 'dispersion' of knowledge. These developments promise acceleration in the rate of growth of stocks of accessible knowledge. That has positive implications for economic growth. Information and communication technologies have greatly reduced the cost and increased the capacity of organizations to codify knowledge, process and communicate information. In short, ICT is the vehicle of the knowledge economy.

12.3 ICT in Bangladesh

For a country like Bangladesh with inadequate natural resources, a piece of land that is only 1/1300th of the world's land mass, but home to as much as 1/40th of the world's population, national development and realization of the Vision 2021 goals will not be ensured unless it harnesses the benefits of science and technology in every conceivable area to increase productivity and efficiency.

Realizing the importance of science and technology in general, and of ICT in particular, the Government of the People's Republic of Bangladesh formulated the National Science and Technology Policy and National ICT Policy 2009. Given the potential of biotechnology to contribute to improvements in agriculture and health, the National Biotechnology Policy has already been adopted.

From the perspective of policy reform and development, the Access to Information Programme (based at the Prime Minister's Office) identified over 53 e-citizen services. These were termed as quick-win activities and are being implemented by the respective ministries and divisions. 21 of these quick-win activities have already been launched, while the rest are being pursued either independently by the implementing ministry/implementing agency, with technical/financial assistance from the Access to Information Programme. The project has already provided technical assistance to ministries and divisions to develop their websites. To ensure that those websites are maintained and regularly updated, the Access to Information Programme successfully arranged training sessions for all Deputy Commissioners and Mukhya Upazila Nirbahi Officers throughout the country. As part of the Digital Bangladesh strategy's formulation and planning, the project

developed a concept note on Digital Bangladesh and assisted the Ministry of Science and ICT to develop a five-year budget to implement Digital Bangladesh projects.

The ICT Policy cuts across numerous thematic groups, including Education, Science and Technology, Infrastructural Development, Employment Generation, Private Sector Development, Agriculture, Health Including Nutrition, Micro, Small and Medium Enterprises. The Science and Technology Policy, including ICT, will deal primarily with overall policy, leaving details to the appropriate thematic groups.

The main objectives of science, technology, and ICT include:

- Emergence of more internationally recognized scientists from Bangladesh, by establishing more institutes of higher learning in science and technology.
- Allocation of a higher share of GDP to research and development.
- Productivity increase in all spheres of the economy, including Micro, Small and Medium Enterprises.
- Inclusion of ICT in education and research to expand the scope and standard of knowledge on ICT throughout the country; to ensure computer literacy at all levels of education and government; to encourage creativity through research and development; and to help in the creation of talent and absorption of ICT in all spheres of life.
- Availing employment opportunities at national and international levels through education and training of ICT professionals to international standards.
- Establishment of a prosperous software industry, to offer services based on ICT, e-commerce/e-business and to ensure growth in the ICT industry with a view to meeting the demand in domestic and international markets, to increase income from external trade, to attract FDI and to reduce dependence on imports.
- Quality healthcare will be provided to all citizens through innovative application of ICT.
- Ensuring universal access to internet/telecom connection as a part of public welfare.
- Improve management of climate change, the environment and disaster management through the application of ICT. Develop and absorb environmentally friendly green technology, and dispose safely of polluted waste including e-waste generated by increased use of ICT products.
- Reduce the time taken to respond to disasters, and ensure effective steps in the overall management of climate change.

Factors that are adversely affecting ICT

Key issues to which science, technology and, in particular, ICT can contribute include

- High rate of illiteracy
- Inadequate rural health facility.
- Gender inequalities in access to and control over the resources and benefits of development.
- Lack of strong educational framework.
- The current education system does not promote creativity and problem solving skills in young women and men.
- Insufficient ICT/scientific infrastructure in rural areas.
- Insufficient power generation.
- Inadequate research initiatives/financial support in science and technology including ICT and bio-technology.

12.3.1 Recent Progress Made in ICT

Some progress has been achieved in Science and Technology for sustainable development. This includes

- National Task Force on ICT has been reconstituted as the Digital Bangladesh Taskforce.
- Copyright Act has been amended.
- National Infra-network Project for Bangladesh Government (BanglaGovNet) is being built. This will connect the ministries/divisions, departments, districts and upazilas in a public e-Governance network.
- BCC has established 128 computer laboratories-cum-training centres in 64 districts to build ICT skills in remote areas. It is in the process of establishing ICT laboratories in another 1,400 schools.
- Through the Support to ICT Task Force initiative, projects have been introduced to enhance and ensure government transparency.

12.4 Issues Relating to ICT and Digital Bangladesh

While acknowledging the many contributions that ICT can make to development in Bangladesh, a few words on the balancing of ICT and Digital Bangladesh with other areas of the economy are in order.

Leapfrogging with Digital Economy and Balanced Growth: It is understandable that countries which will be following the principles of digital technology and knowledge economies may be able to grow faster than those that digital technology bypasses. But the 'leapfrogging' argument (whereby a digitally compliant country downgrades heavy infrastructure building and transportation directly into knowledge economy) may not be tenable. There has to be a balance of priorities.

The productivity of agricultural labour rocketed with the use of industrial and biological innovations, such as tractors, irrigation systems, fertilizers, pesticides, and genetically engineered seeds. Historically, industrial innovation in developed economies has created great wealth and improved living standards. That progress put them in an ideal position to create and exploit knowledge as they transform into knowledge-based economies. Crucially, the greatest source of productivity and growth attributed to the knowledge economy derives not from the knowledge economy itself, but from its effects on the industrial economy.

It has been argued that a broad manufacturing base is necessary to reap the benefits of digital and knowledge economies. Bangladesh could pursue manufacturing and agro-base industries more aggressively to build a robust industrial economy that could be made more efficient with ICT.

Software market: There is much enthusiasm among educated people in Bangladesh for the software market in the United States and Europe. That, of course, is quite normal, especially through demonstration effect from the immediate neighbourhood. Indian software successes are attributed to in-depth IT training in India, to the expatriate connection with the US Silicon Valley, and to some extent on the standard of English language in the Indian IT community. There nevertheless remains a significant potential to explore the US software market, particularly given its size: India now has 60 per cent of the US software import market, which is worth about US\$40 billion. With the necessary support and training, Bangladesh can position itself as an additional outsourcing supplier.

The rapid growth of IT will likely lead to a digital divide in the short term, where the rich and educated are empowered and enriched by IT, while the poor do not benefit. The challenge for government is to ensure the equitable distribution of wealth across social divides.

12.5 E-governance

There is a difference between e-government and e-governance. E-government is related to the delivery of government services and information to the public using electronic devices. It views how citizens relate to government and to each other. E-governance is not just about government websites and e-mail. It is not just about digital access to government information or electronic payment of taxes and bills. E-governance will manage the way that citizens deal with the government and with each other. E-governance allows citizens to communicate with government, participate in government policy making and planning, and allows them to communicate with each other. E-governance allows citizens and civil society to participate in government decision-making processes, so that they can express their welfare needs and aspirations. It is the use of technology as a democratic tool. It could be that e-government and/or e-governance will make up the bulk of Digital Bangladesh.

Strategy for E-Government: A sound e-government policy should include a focus on end-users and demand-driven services. Government services will be made available through e-government. Government should prioritize the services that they will initially offer online, such as (i) revenue collection, (ii) improved financial management, and (iii) creation of a better investment environment. Examples might include online tax payments, renewal of licenses and permits, business registration, and ordering of data (i.e. birth and marriage certificates). Online information on tender documents could do much to improve tendering processes.

E-Governance Promoting Digital Democracy: Digital democracy refers to the use of information and communications technology that enhances citizen participation in the democratic process. It is the computerization of political discourse, policy-making and the political process. It ultimately increases, enhances and deepens citizen participation in government policy and decision-making processes through electoral campaigns, voting, consultation and participation in the policy process, public opinion polling and communication exchange between elected officials and constituents.

ICT will contribute to the improvement of E-agriculture, E-medicine, E-learning, and many other knowledge areas. Mutual reinforcement and linkages will allow everyone to benefit.

Targets

- To promote science, research and development will be greatly promoted, bringing expenditure on research and development from the current 0.6 per cent of GDP to 1.4 per cent, which is the average of such expenditure in LMI countries.
- ICT education will be made compulsory at the secondary level by 2013, and at the primary level by 2021.
- Telecentre/community e-centres with internet facilities in unions will reach 50 per cent by 2015, and 100 per cent by 2020.
- Computer laboratories will be established in government primary schools, first with 5 by 2014, then with 10 by 2017 and finally with 20 computer sets by 2021.
- The E-governance model will be developed and implemented. It will begin with e-tenders and e-bill payments.
- Introduction of E-governance at all executive levels of government by 2015.
- Arrangement for electronic GD and FIR at all Police Stations, initially in Dhaka and then in other metropolitan areas by 2015, and in all police stations by 2021.
- Increase teledensity to 70 per cent in 2015 and 90 per cent in 2021.
- Expansion of broadband to 30 per cent in 2015 and to 40 per cent in 2021.
- Introduction of wireless broadband (WiMax) across the country by 2015.

12.6 Strategic Goals

The National ICT Policy 2009 has produced a detailed and time-bound action plan of 306 activities. These are to be implemented in the short-term, medium-term (5 years) and long-term (10 years). The following strategic goals are based on, among others, the ICT policy and the participatory national level consultation held under the auspices of the OPMP project.

- Facilitate quality education for disadvantaged sections of the population, including marginalized women/girls and men/boys, by innovative application of ICT technologies.
- Create stimulating environments for educational excellence by introducing Olympiad competitions for boys and girls at every educational level.
- Improve the quality of gender-responsive health care for the rural poor by developing computer-based medical consultation systems and installing them in upazila hospitals.
- Introduce and strengthen bio-technological research for increased crop production.
- Increase power generation substantially by use of nuclear energy, which will also help boost industrial growth.
- Generate employment by making ICT literacy available particularly to young men and women in disadvantaged parts of the country.
- Promote increased transparency, reduced scope for corruption, and more efficient governance. This will particularly help illiterate and disadvantaged sections of the population to navigate government and reduce bureaucratic obstacles.
- Create a centre of excellence in science and technological research to develop solutions to technological challenges and reduce dependence on foreign experts.
- Ensure the effective utilization of resources such as computers, internet connectivity, and industrial complexes by close monitoring using ICT tools and processes.
- Improve teledensity to bring most of the population under the ICT umbrella. Activities will include the introduction of e-community centres. Emphasis will also be given to connectivity for internet and other e-education activities. Building the infrastructure for high-speed internet and related support services such as telemedicine should be a major goal.
- Reformulate science and technology policies in the context of revolutionary developments in ICT and bio-technology, with a particular focus on poverty reduction strategies.
- Give appropriate importance to indigenous technology and inspire local technology through appropriate import and export policies.
- Make serious efforts to develop technologies for community housing in coastal areas.
- Establish Bangladesh as a business process outsourcing destination.
- Ensure universal connectivity, for which the Universal Service Fund may also be used.
- Promote new technologies, value added services, content generation and promote/facilitate content service providers.
- Increase international connectivity by means of submarine cable or satellite.
- Introduce IP telephony and video conferencing services.
- Promote soft-term loans for young and fresh entrepreneurs and promote self employment initiatives.
- Rationalise the taxation policy for a range of ICT equipment.
- Rationalise the pricing and licensing systems for internet services by total volume of traffic rather than by type of services.

It is hoped that by implementing plans set out in the Digital Bangladesh policy, the country will move towards a poverty-free middle-income prosperous country status.