Making Vision 2041 a Reality

PERSPECTIVE PLAN OF BANGLADESH 2021-2041

General Economics Division (GED)
Bangladesh Planning Commission
Ministry of Planning
Government of the People's Republic of Bangladesh

March 2020

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A Note on this Edition
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"As a man, what concerns mankind concerns me. As a Bengalee, I am deeply involved in all that concerns Bengalees. This abiding involvement is born of and nourished by love, enduring love, which gives meaning to my politics and to my very being."

Unfinished Memoirs: Sheikh Mujibur Rahman

بِسْمِ اللهِ الرَّحْمٰنِ الرَّحِيْمِ

PRIME MINISTER
GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH

Message

Bangladesh's undisputed leader, the greatest Bangali of all times, our Father of the Nation Bangabandhu Sheikh Mujibur Rahman was the architect of our independence, who inspired us to fight a deadly war for independence for emancipation of our country. He dreamt of a poverty and hunger free Bangladesh, and a prosperous country with a high living standard for all of its citizens. In 2019, when we formed the government for the fourth time, we promised to our citizens that we will transform Bangladesh into a developed country by 2041 to achieve Bangabandhu Sheikh Mujib's dream. The dream of Bangabandhu Sheikh Mujib - a "Golden Bangladesh" is no more a myth. We have prepared 'Vision 2041' for the accomplishment of that dream and a 20 year long perspective plan to attain the goal. As we are celebrating the birth centenary of Bangabandhu Sheikh Mujib, I am delighted to present the plan for 'Making Vision 2041 a reality: Perspective Plan of Bangladesh 2021-2041' for the people of our country.

Between 1975 to 2009 with exception from 1995 -2001, the country was run by the anti-liberation forces and mired by anti-people socio-economic policies. To repair the damages, we adopted the charter of change and introduced 'Vision 2021'. The document envisioned transforming Bangladesh into a middle-income country by 2021 that aimed to attain high growth, reducing poverty and inequality, improving human resources and environmental response action plan. For translating the political manifesto of the Awami League into an Action Plan, we prepared first ever 'Bangladesh Perspective Plan 2010-2021' identifying the long-term development priorities. Through 6th and 7th Five Year Plans, we have achieved an average GDP growth rate of 7%, attained most of the MDGs and graduated from low income country to lower-middle income status by 2015. We have also fulfilled all the UN threshold criteria for graduating from the Least Developed Country (LDC).

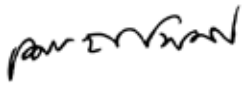
The 'Vision 2041' has been adopted in line of 'Vision 2021' to provide impetus to the development dream of the nation. Its aim is to end absolute poverty and to be graduated into higher middle-income status by 2031, and eradicate poverty on way to becoming a developed nation by 2041. Learning from the experience of higher-middle and high-income countries, we will deliver all facilities of a modern city at the village level transforming our villages at the center point of development.

The Perspective Plan 2021-2041 has been prepared to translate the policies and programmmes enshrined in the Vision 2041 into development strategies. This document is the development vision of the government of a prosperous Bangladesh, a strategic description of the goals and objectives and a roadmap for its implementation. The institutional basis of this plan is fourfold, such as, good governance, democratization, decentralization and capacity building. The main beneficiary will be the people of Bangladesh and they will be the key driving force of growth and transformation.

I congratulate all concerned officials of the General Economics Division (GED) of the Planning Commission for their committed efforts to prepare 'Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041'. My Government support will be unstinted and I call upon the people of all walks of life to come forward for implementation of this Vision. I invite all, irrespective of political affiliations, with a clarion call to be a part of this journey towards building a better future of a prosperous Bangladesh.

Joi Bangla, Joi Bangabandhu,

Long live Bangladesh



Sheikh Hasina

M.A. Mannan, MP
Minister
Ministry of Planning
Government of the People's Republic of Bangladesh

Message

I am greatly delighted to hear that "Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041" is finally coming out as a published document.

Ten years have passed since we formulated first Perspective Plan of Bangladesh 2010-21 in which we envisaged to become a middle income country and to transform the country into a digital Bangladesh. We have prepared the document at a time when the nation celebrated the hundred birth anniversary of our father of the nation. Under the leadership of her daughter, our visionary leader Prime Minister Sheikh Hasina, Bangladesh finds its pathway to move to prosperity while fostering the lives of its citizen. The second Perspective Plan 2021-2041 will be a landmark document over the next twenty years as it paves Bangladesh the way of becoming an upper middle income country by 2031 and a prosperous country by 2041 in the platinum jubilee of its birth. I admit that the task does not seem easy but if we work collectively with the spirit same as that we had when we fought liberation war, these goals will not be impossible to achieve.

In the past decade, we have had tremendous success when it comes to socio-economic development but we have to keep in mind that there is no place for complacency. The world is moving faster and a few countries are outperforming us. We have huge population, but to transform them as asset, education and knowledge of ICT are sin qua non. In the last decade, the government took initiatives to make every service digital. The result has been obvious, now ICT is changing the lives of rural Bangladesh by making education and health, agriculture services more accessible to them.

Apart from the above, we have to keep pace with the world by achieving the global agenda - called Sustainable Development Goals (SDGs). We will be implementing SDGs through the next two five year plans. We alone cannot attain the goals within the stipulated time that is why we need partnership and cooperation with both the developed and developing world through transfer of knowledge, technology, investment and trade.

I would like to particularly thank General Economics Division (GED) for drafting and finalizing this document. I also want to pay gratitude to honorable Prime Minister for her guidelines, inspiration and adopting the Vision 2041.

Joi Bangla, Joi Bangabandhu,

Long live Bangladesh

M A Mannan, MP

Dr. Shamsul Alam
Member (Senior Secretary)
General Economics Division (GED)
Bangladesh Planning Commission

A Prefatory Note

I feel enormously happy that "Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041" is finally being published. It particularly gives me immense pleasure that I have become a part of the history of long term Development Planning charting a path for two decades of transformation.

Eleven years ago, I joined the General Economics Division (GED) as the Member. That time, I was assigned to lead the formulation of the first Perspective Plan of Bangladesh 2010-2021: Making Vision 2021 A Reality to materialize the Vision 2021 which aims to see Bangladesh as the middle income country by 2021 among other important milestones such as deepening of information technology towards making a Digital Bangladesh. The first Perspective Plan contains 14 broad goals for a transformed Bangladesh. Ten years later, many of them have either been achieved or are on the verge of achieving goals. I feel highly privileged that the government has had full support for me over a decade long glorious journey with GED. In retrospection, during the last decade under my leadership, the role of GED as well as Planning Commission has somewhat brought back its heyday as in the period of reconstruction after the devastating damage in the liberation war – but in a different fashion. We moved from the era of reconstruction to that of transformation. The development context has changed considerably specially when Bangladesh has already achieved the status of lower middle income country and met all the criteria for graduating from Least Developed Country Status to a developing country status to be materialized by 2024. We have made achievement in MDGs and in the period of SDGs, we want to achieve rapid, inclusive and sustainable transformation for shared prosperity.

"Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041" is a genuine articulation of the government to transform the country from a lower middle income country to Upper Middle Income Country by 2031 and a high Income country by 2041 under World Bank Classification. The other juxtaposed goals are eradicating extreme poverty by 2031 and zero poverty by 2041. The Strategic Goals and milestones of the Plan include industrialization with export-oriented manufacturing; paradigm shifts in Agriculture to enhance productivity, a service sector of the future-providing the bridge for the transformation of the rural agrarian economy to a primarily industrial and digital economy; the urban transition - an essential part of the strategy to move to a high-income economy primarily motivated by the agenda of the government -"our village, our town"; efficient energy and infrastructure; building a Bangladesh resilient to climate change and other environmental challenges; and establishing Bangladesh as a knowledge hub country.

The Perspective Plan has been prepared under the direct guidance of honorable Prime Minister. She gave instruction to start the work in a National Economic Council (NEC) meeting in October 2015. First a panel of experts was formed to provide guidelines in different sectors and based on the macroeconomic framework agreed by Finance Division; the Perspective Plan has been drafted. The draft document has been then shared with Ministries/Divisions. It is worth mentioning that the draft document has been presented before honorable Prime Minister along with her advisers and other Ministers and Secretaries to inform her before NEC meeting. Even before NEC meeting, an extended consultation meeting presided over by honorable Minister, Ministry of Planning was held in January with all Secretaries of Ministries/Divisions. The feedback from these meetings has been reflected in the document as far as possible. In this sense, the document has been finalized throughout a participatory process. We have to keep in mind that this is a vision document and an outline of a perspective plan– if anyone looks for detail strategy about something this might not fill his/her expectation because it only provides guidelines and strategic directions that to be elaborated in associated four five year plans. Based on this vision document, four consecutive five year plans will be formulated, where detail strategies and action programmes will be available. This document is instrumental because it covers two important transitions of Bangladesh- one is graduation from LDC status expected to happen in 2024 if the country met the criteria again in the second triennial review by United Nations Department of Economic and Social affairs (UNDESA) in 2021 and the second is implementation of SDGs by 2030. I have to note also, we had to prepare this dream document (2021-2041) a year earlier (2020) to facilitate preparation of the 8th Five Year Plan (2020-2021) which would be the first Five Year Plan under this Perspective Plan. The Second Perspective Plan (2021-2041) would cover the periods of 8th, 9th, 10th and 11th Five Year Plans through which objectives of PP2041 would be attained.

The vision document consists of twelve chapters- including topics ranging from governance, human development, industry and trade, agriculture, power and energy to ICT and climate change and environment. It also includes macroeconomic framework which gives targets in each financial year of important macro indicators in more detail. I hope, each Ministries/Divisions/Agencies of the government will act together to attain the dreams that our Father of the Nation once dreamt when he started building of the nation.

Finally, I have to say, I am grateful to honorable Prime Minister that she trusted me for doing such an important seminal work for the nation. I thank GED officials particularly those of Macro and Perspective Plan Wing who wholeheartedly worked with me to make this happen. I also wish to express my gratitude to our Planning Minister Mr. M. A. Mannan M.P. for his constant support and cooperation extended to me. I am also thankful to the Ministries/Divisions for their feedback and full support.

Shamsul Alam, PhD

March 2020, Dhaka

Executive Summary

The Vision 2041

Deft economic management and strong political leadership of Prime Minister Sheikh Hasina helped Bangladesh achieve a decade of 7 percent average GDP growth, crossing the Lower Middle-Income threshold in 2015, and meeting all criteria for graduation out of LDC status. Buoyed by these successes, the Government is now set to launch a program to realize the dream of Father of the Nation Bangabandhu Sheikh Mujibur Rahman to have a country that is free of poverty, where economic and social justice prevails, and where there is shared prosperity. Accordingly, the government has adopted Vision 2041 that is a continuation of Digital Bangladesh Vision 2021 and seeks to take the nation to the development path dreamt by Bangabandhu. Specifically, Vision 2041 seeks to eliminate extreme poverty and reach Upper Middle-Income Country (UMIC) status by 2031, and High-Income Country (HIC) status by 2041 with poverty approaching extinction. To convert Vision 2041 into a development strategy, with policies and programmes, this document launches 'Making Vision 2041 a Reality: Perspective Plan of Bangladesh 2021-2041' (PP2041). The PP2041 builds on the successes of PP2021, while also drawing on the good practice experiences of current UMICs and HICs that have already travelled the development path that Bangladesh is endeavouring to travel.

Key Elements of PP2041

Over the next two decades, Bangladesh will experience an accelerated pace of change that will be rapid and transformational. It will have to cope with rapid transformational shifts in agriculture, trade and industry, in education and healthcare, in transportation and communication, and in the way we work and conduct business. Rapid growth will be balanced with an emphasis on equitable distribution of the benefits of growth for all, especially the poor and the vulnerable. While these goals are pursued with vigour, the Government will ensure that key natural resources like land, water, forestry, natural habitat and air are used in a manner that avoids their depletion and degradation.

As noted, two principal visions underpin the PP2041: (a) Bangladesh will be a developed country by 2041, with per capita income of over USD 12,500 in today's prices, and fully in tune with the digital world; (b) Poverty will become a thing of the past in Sonar Bangla. The transition—indeed transformation—can be realized through a process of rapid inclusive growth leading to the elimination of poverty while increasing the productive capacity, building an innovating knowledge economy and protecting the environment. The associated growth and poverty reduction targets are summarized in the table below.

Growth and Poverty targets for PP2041

Indicator	Benchmark FY20	Target FY31	Target FY41
Real GDP Growth (%)	**8.2**	**9.0**	**9.9**
Poverty indicators			
Extreme Poverty (%)	**9.4**	**2.3**	**<1.0**
Poverty (%)	**18.8**	**7.0**	**<3.0**

The challenge is formidable but the stakes are high. Setting an ambitious goal is the starting point of a long journey that will require steadfast resolve to stay the course while making hard political and economic choices along the way which is why a road map like the PP2041 becomes necessary. Achieving high growth with shared prosperity requires coordination of cross-cutting policies and synchronization of multi-sectoral programs aimed at achieving the final outcome. Therefore, it is critical that thematic and sectoral strategies under PP2041 are robust and internally consistent. Moreover, for Bangladesh to become a prosperous, developed and poverty free nation by 2041, the Government must play a leading role in creating an adaptive national system for collective, whole of society planning, adaptation, action and learning through collaboration among policymakers, private sector, academia, skills development organizations and development partners.

High growth, job creation, and reduction of poverty and inequality are the final outcomes that are built on foundations of sustained macroeconomic stability which in turn demands effective tax and expenditure policies, savings mobilization and investment growth focusing heavily on transport, trade, and energy infrastructure, to raise productivity of firms engaged in economic activities. As movement from agriculture-to-industry and rural-urban migration reaches the turning point with tightening of labour markets, job-creating export-oriented industrialization in a digital era of globalization and Industry 4.0 will need consistent trade and industrial policies in tune with 21st century cross-border transactions of goods and services. Agriculture, though declining in relative size, will remain a pivotal sector for food security and nutrition balance, and inter-sectoral policies have to be directed towards gaining a highly productive modern agriculture that is diversified and also climate-resilient over the long-term. For reaching high-income status in two decades, there is no alternative to investing in human capital development for raising educational quality and deepening skill development programs to support the innovation-driven knowledge society of the future. PP2041 is that articulation of the symphony of cross-sectoral and multi-dimensional policies and strategies – a 20-year roadmap designed to reach the ultimate goal of Bangladesh becoming a developed country by 2041.

Institutions Matter

Historical evidence shows that rapid and inclusive development of societies is driven by strong and effective institutions. Therefore, PP2041 recognizes the criticality of institutions in Bangladesh's development process. Policymakers now have a deeper appreciation of the underlying institutions that make markets work. Drawing from historical and research evidence they conclude that economic institutions matter for economic growth because they shape the incentives of key economic actors in society. In particular, they influence investments in physical and human capital, foster innovation and technological advance, and promote the organization of production systems. Vision 2041 and the associated PP2041 rely on four institutional pillars that will be harnessed by the people, who are the principal drivers of growth and transformation. These are (i) governance; (ii) democratization; (iii) decentralization and (iv) capacity building. Bangladesh's path to prosperity as a developed nation must be founded on the strength of these four pillars.

Shared prosperity is a basic thrust of the PP2041, facilitated by effective institutions of governance: a properly functioning judiciary, a citizen centric civil administration, efficient land management, and sound economic management, among others. The second pillar of Vision 2041 is democratization.

What Bangladesh needs moving forward is a full pluralistic democracy. The target is that of a pluralistic democracy where policies and strategies are embedded in respect for critical values. The third pillar is decentralization. Bangladesh cannot go forward and be a developed country by 2041 unless administrative, financial (including revenue) and political power is decentralized to the grassroots level. Major investments will be made to strengthen institutions of decentralized government and administration from the top down to the grassroots. The fourth pillar is institutional capacity building. The purpose of building the capacity of institutions is to make them compatible with a transforming economy which is focused on strategic relationship, resource development and internal management and operations.

Macroeconomic management for accelerated inclusive growth

Macroeconomic stability is an essential prerequisite for growth. PP2041 comes at a time when Bangladesh is experiencing a growth surge spurred by strong national policies of inclusive growth. This growth path is underpinned by prudent macroeconomic management reflected in low inflation, low fiscal deficits, a comfortable balance of payments and low internal and external public debt. This sound macroeconomic management will be maintained under PP2041.

Approach to Fiscal Operations: A key factor in Bangladesh's prudent macroeconomic management has been the maintenance of sustainable fiscal deficits and public debt for nearly three decades. The strategy has been to keep public expenditures within the bounds of available revenue envelope plus external resources and low domestic borrowings. Consequently, fiscal deficits have been contained to within 5% of GDP resulting in a modest buildup of public debt over time. This prudent fiscal policy stance will be maintained under PP2041. However, a difficult fiscal challenge has been the very low tax to GDP ratio. At around 9% of GDP, it is among the lowest tax effort in the world. Raising the tax to GDP ratio to around 20% of GDP will be the most pressing fiscal policy challenge for PP2041. To augment revenue in order to finance the growing demands for public investment in infrastructure and other public services, revenue mobilization will adopt a strategy of expanding the tax base and making the strategic shift from heavy reliance on trade taxes to focusing on direct taxes (income and corporates) and value added tax (VAT). The other thrust will be to make public expenditure more pro-poor, gender-sensitive, and environment-friendly; to improve the quality and effectiveness of public spending; and to establish accountability and transparency of public expenditure.

Monetary Management to combat inflation and foster growth: Bangladesh has generally succeeded in maintaining reasonable price stability although it is still a bit higher than desirable. High inflation, especially led by food price inflation, directly hurts poor people. So, the target for the future will be to reduce the rate of inflation to around 4-5 per cent per year and maintain it at that level. This will be done by ensuring well-coordinated monetary and fiscal policies; improvements in productivity; attention to supply augmentation with emphasis on food security; enhanced public sector role in infrastructure and strengthened competition policies in a largely deregulated market economy.

Sustainable Balance of Payments: PP2041 projects robust export growth on the back of export-oriented manufacturing expansion. RMG exports will continue to lead the way for much of the Plan period, though new and diversified export products will emerge as export diversification strategy begins to take hold. Home textiles, Jute and jute goods, footwear and leather goods exports are likely

to emerge as the next ones to watch, followed by agro-processing, light engineering and electronic goods, to name a few. The export strategy of the future will take a two-pronged approach: (a) put in place a policy regime that accords the same facilities (duty-free imported inputs) to all non-RMG exports as are provided to RMG, and (b) the tariff and protection regime will be rationalized to eliminate the policy bias against exports. With projected remittances growing at around 10% a year, the current account balance should be comfortable and will allow Bangladesh to procure the imports necessary to support high growth.

On the capital account, emphasis will be put on enhancing the 'ease of doing business' for attracting greater direct foreign investment to finance infrastructure and manufacturing investments. This will also facilitate technology transfer. As in the past, external borrowing strategy will be cautious. Over the next two decades, as Bangladesh graduates out of the LDC status, the share of concessional multilateral loans will start dwindling and non-concessional loans will start appearing larger in Bangladesh's outstanding loan portfolio. As the private sector also takes on external debt from the capital markets abroad, the overall debt burden and cost of servicing debt is expected to rise. However, with the economy's growth rate reaching greater heights, it will be able to sustain moderately higher debt with somewhat higher interest cost.

Exchange Rate Management: The government has been following a flexible market-based exchange rate policy that has helped exports and achieve stability in the exchange rate, while at the same time enabling build up foreign exchange reserves to a comfortable level of US$33 billion by end June 2019. This policy will be preserved under PP2041. The key objective of exchange rate policy would be to maintain export competitiveness by containing any appreciation of the real effective exchange rate. The comfortable external position will also help to ease some of the current and capital accounts restrictions in a phased manner. Such a phased liberalization of the foreign exchange system would help boost investor confidence in the economy and promote inflow of FDI.

Savings-Investment nexus for growth: As in the past, a key driver of higher GDP growth will be investment, which is projected to be, on an average, 40% of GDP under PP2041. While productivity growth will also play a major role in accelerating growth, higher public and private investment rates are necessary to build the production base and supporting physical and social infrastructure. The sharp rise in investment projected in the PP2041 period will be supported by a significant increase in domestic savings, remittance inflows and direct foreign investments. Foreign borrowings will also play an important role, especially to finance large infrastructure.

Zero Poverty Country

Growth has to be inclusive and poverty reducing. Consistent with the dream of Bangabandhu, the Vision for poverty outcome is that by 2031 extreme poverty will be eliminated and by 2041 the incidence of poverty will be minimal (3% or less). By 2041, all citizens will be guaranteed a minimum quality of life, based on employment income for all who seek work and social protection benefits for the vulnerable population who cannot participate in the labour market owing to age and physical disabilities. Under-employment would be a thing of the past. As in current high-income economies, poverty will become a relative concept. Those considered poor in this situation will have at least enough income to buy the minimum consumption basket for quality of life.

The PP2041 also sets a modest target for reduction in income inequality as measured by the Palma Ratio, which is a better indicator of the inequality problem than the traditional Gini coefficient. On the policy front, several challenges will need to be addressed on a priority basis. First, despite its shrinking GDP and employment shares, agriculture will continue to play a major role in poverty alleviation. Second, since most of the output and employment growth will need to come from the manufacturing sector (including agro-based and SMEs) Bangladesh will need to pursue a strategy of promotion of labour-intensive exports. Third, the small manufacturing enterprises (SMEs) provide a lot of employment but they lack dynamism, suffering from low productivity, low investment, low skills and low technology.

Strengthening the human capital base of the poor is essential for sustained poverty reduction. While the positive role of human capital already became explicit in the past record of poverty reduction, this will become even more prominent under PP2041. Adequate investment in human capital formation of the poor is perhaps the most pressing policy challenge facing Bangladesh in the coming years. This will require additional funding to ensure social safety-net like food, clothing, shelter, health and education with an emphasis on quality and on eliminating the inequalities of access to relevant services for the poor. The importance of access to finance for poverty reduction is well demonstrated by past poverty reduction experience in Bangladesh. The microcredit revolution supported by government policy has made this possible. The PP2041 strategy will further build on this positive experience. The government will escalate renewed efforts to address the most vulnerable, the most disadvantaged, the marginalized and the socially excluded section of the society. Ethnic minorities living in the CHT and the plain districts will be given utmost attention. Efforts will be reinforced in taking care of the persons with disabilities, dalits, bede people, people living in slum areas and charland, street children, sex workers through full implementation of the NSSS.

Human Development: Harnessing the Demographic Dividend: The PP2041 puts a strong emphasis on improving human development both as means to supporting GDP growth through a healthy and skilled labour force as well as to reduce poverty through productive employment. The PP2041 programme for human development is driven by the core growth and poverty targets to achieve high-income status and mostly eliminate absolute poverty by 2041. Specifically, the programme comprises the following: (a) Institution of a knowledge-based economy; (b) Population with 100% literacy rate; (c) Universal free education for up to 12 years; (d) Flexible supply of training institutions for all who seek to acquire job-based skills; (e) Universal access to health insurance schemes at affordable prices; (f) 100% coverage of employment-based accidental and health insurance schemes for all workers in the organized sector, (g) Ensuring medical facilities for all at affordable cost.

PP2041 Strategy for Population Health and Nutrition: The government will gradually increase the public health spending to 2.0 percent of GDP by FY2041. The major health policy includes expanding public health clinic and improving health care service delivery, strengthening health sector governance, improving health information system, improving quantity and quality of health professionals. In line with SDGs, the government is committed to achieve Universal Health Care by 2030.

PP2041 Strategy for Education and Training to harness the demographic dividend. The education and training targets for PP2041 indicated above will challenge public policy. A major challenge is to convert the ongoing demographic transition, whereby the share of the active population (age 15-64) is increasing relative to the total population, to a true development dividend. This will be done with a careful strategy to convert this age group into a well- educated and trained labour force through appropriate investments and incentives in education and job-based training. From both delivery capacity and funding perspectives, public sector alone cannot address these challenges and a strong public-private partnership with coordinated investments and enabling policies will be essential. The partnership will be strategic where the private sector will play a dominant role in tertiary education and skill training whereas the public sector will be dominant in primary and secondary education and in ensuring equity considerations in education. For both delivery system, emphasis on quality will be the major theme. The training strategy will ensure that skills are related to jobs and not supply-driven.

Sustainable Agriculture to ensure Food Security and Nutrition

The economic sectors with the most influence on poverty reduction are agriculture (including fisheries and livestock) and rural non-farm activities. In keeping with the stylized facts of structural change during the development phase of an economy the share of agriculture in GDP has been on a secular decline, from about 60% in the 1970s down to only 13% in FY2019. But agricultural growth has accelerated from less than 2.0% per year during the first two decades after independence to an average rate of about 3.9% per annum, during 2011-18, exceeding population growth. Whereas Bangladesh began its journey as a rice deficit country, perennially dependent on food aid to feed its population, that dire situation has been turned around by Bangladesh's toiling farmers supported by effective policies of the Government. With the spread of high-yielding varieties (HYVs) of rice, predominance of Boro crop with irrigation and use of chemical fertilizers, it was the 'Green Revolution' that enabled Bangladesh to increase food availability to meet the demands of a rapidly growing population. Rice production nearly quadrupled from 10 Million Metric Tons (MMT) in the 1970s to 36 MMT in 2018 coupled with significant production increase in non-rice crops like potato, maize, wheat, vegetables and fruits along with fish and poultry, helping Bangladesh achieve near self-sufficiency in rice production and ensuring food security. This has also been instrumental in raising farm incomes and increasing real agricultural wages, thereby contributing handsomely to rural poverty reduction.

The Fisheries and livestock sector have proven to be one of the most productive and dynamic sectors in Bangladesh, experiencing a revolution of sorts for the last few decades. Considering the contribution of fisheries sector in national economy Bangladesh government is implementing result-oriented specific programs for sustainable fisheries management through innovation and dissemination of environment-friendly new fisheries technologies. According to the FAO report The State of World Fisheries and Aquaculture 2018, Bangladesh ranked 3rd in inland open water capture production and 5th in world aquaculture production. About 20% of the population is directly and 50% of the population is indirectly employed in the livestock sector. Livestock may contribute to food security through increased output of livestock products and the creation of employment and income generation that may assure access to food.

A paradigm shift in agriculture is taking place at a rapid pace which will be sustained into the 2040s. As incomes rise, the structure of demand for food has also exhibited shifts towards improved nutritional intake. Considerable consumption diversification has taken place, with lesser per capita consumption of rice and increased consumption of nutritious food items like vegetables, fruits, pulses edible oils and also meat, fish, egg and milk, especially for the urban people. Supply response has mimicked demand shifts with diversification of production from rice agriculture to increased production of non-cereal crops. Growth of non-crop agriculture – fisheries, livestock, and horticulture – has outstripped crop-agriculture growth. This growth has been supported by increased private investments in non-crop production and in the food processing industry although it deserves further expansion while maintaining excellence in quality. Supply response to changes in demand patterns is pushing agricultural diversification and a paradigm shift from cereal-cereal cropping patterns to cereal and non-cereal based high value cropping patterns with value-added products, including the expansion of horticultural pulse, and oilseed crops. Livestock and fisheries, now the fastest-growing component of agriculture, will have to continue growing at their present pace or even faster to catch up with demand growth.

Notwithstanding past progress and ongoing measures, developing resilience to climate change adds another dimension to agriculture requiring several additional initiatives to cope with the growing risk of climatic developments, in order to ensure food security, and nutrition. Six strategic approaches are called for: (a) Bringing unfavourable agri-ecosystem under productive sustainable agricultural practices; (b) Intensification of crop cultivation in productive agricultural land maintaining sustainability of soil health; (c) Sustainably Intensifying Agricultural Production Systems without bringing new land under cultivation; (d) Increasing Resilience of crop and livestock production systems in the face of climate change; (e) Diversification in agricultural output and livelihoods involving more plant species or varieties, or animal breeds, off-farm activities and employment; and (f) Coping with Uncertainty in Developing Responses due to uncertainty about the scale and eventual nature of adaptation needed to address climate change.

Going forward, the key priorities for the future of sustainable agriculture include strengthening local adaptive capacity by providing public goods and services, such as better climate information, innovative research for the development of heat-tolerant, salinity- tolerant crop varieties and climate-smart production technologies, efficient water-saving irrigation practices and early forecasting/ warning systems. In order to cope with the changing climate, integrated farming system should be followed adopting good agriculture practices like Conservation Agriculture (CA), Integrated Plant Nutrition System (IPNS), and Integrated Pest Management (IPM) options. In water resources, the priority is to scale up existing good practices of water conservation and management and apply more widely integrated water management, including flood control and prevention schemes, flood early warning systems, irrigation improvement, and demand-side management. In the forestry sector, the priority is to implement effective public-private partnerships for reforestation and afforestation. These aspects of sustainable agriculture are well integrated in the Bangladesh Delta Plan (BDP2100). The government has already adopted the Delta Plan and the implementation is underway. PP2041 will put a strong emphasis on the proper implementation of the Delta Plan. Next two decades, commercializing of agricultural production would be the highest priority.

Accelerated growth with industrialization and trade

Growth acceleration now and in the future has to rely on the dynamism of industry and trade. Bangladesh's future growth and prosperity lie in outward-looking industrialization to create good jobs and income by exploiting our competitive advantage. Bangladesh is already growing at 8% plus annual rate and aspires to reach 9-10% rate. In this effort, Bangladesh will take advantage of the enabling effect of trade integration with the vast world economy. Industry will be the lead sector driving growth acceleration.

For much of the next quarter-century, the bulk of job creation in Bangladesh will be taking place in a diversified manufacturing sector that is globally competitive, export-oriented, and focused on breaking into emerging markets while expanding its market share in developed economies of the world. Trade and industrial policies are not mutually exclusive but self-reinforcing. Trade openness, therefore, is another lever of development that will have to be fully mainstreamed with Bangladesh's export-oriented industrial growth process. With the labour cost advantage that Bangladesh enjoys, at least for another decade, there are good prospects for expanding exports of labour-intensive products other than RMG.

At least for the medium-term, low-cost labour will continue to be the source of competitiveness of Bangladesh exports in RMG as well as non-RMG products. However, policymakers and private entrepreneurs will have to look out for (and ready to adopt) the technological advances occurring in the global marketplace in the coming decades in order to ensure sustained competitive advantage in exports. As development proceeds, Bangladesh will position itself to increase the technology and capital and skill intensity of production to fully benefit from the rapidly transforming global manufacturing market place. Like Korea, Taiwan, and Malaysia, it can be surmised that by 2031, if not earlier, Bangladesh will have to move towards technology-intensive exports and requisite investment in developing appropriate skills and logistics to ensure the future competitive advantage of Bangladeshi firms will have to begin now.

Industry 4.0 and trading in a competitive digital world: The Fourth Industrial Revolution (Industry 4.0) is upon us. The spread of digital technologies is transforming all types of global flows - those of goods, services, money, and people and this transformation are only in its earliest stages. Bangladesh industry is gradually embracing the latest technologies though cost imperatives make labour-intensive production still attractive. It will take several more years for technological change to catch up through leapfrogging innovations that are technology-intensive. These changes, automation, have to be closely watched due to the risk of machine-driven labour displacement, which might undermine labour-cost advantages on which Bangladesh has been relying so heavily. A notable demographic feature in the country is the rapid rise in the youth labour force. Youth are typically savvier in digital applications and innovation. Growth of youth labour force in a country is considered to be indicative of a potential for demographic dividend and can be a positive factor in attaining economic growth.

Over the long haul, Bangladesh will have to industrialize and trade within some notable trends that will shape the future of trade: (a) Trade liberalization will continue, (b) Trade facilitation will reduce cost and increase speed of trade, (c) Global value chains will evolve and consolidate, (d) Digital innovation in industry and trade will drive competitiveness over the long run, (e) Micro-

multinationals will emerge and thrive. Therefore, over the next 20 years, Bangladesh's progress to middle-income and high-income status will have to be largely driven by a high performing export sector that is competitive in a highly globalized world.

Strengthening competitive advantage: Competitive advantage founded on low labour cost cannot be guaranteed for all time. The new theory of competitive advantage starts with the premise that competitive advantage is dynamic and evolving. To address future challenges and ensure competitiveness, a harmonious public-private endeavour has to be developed in Bangladesh in the following priority tasks: Easing infrastructure constraints; Enhancing the quality of the workforce; Investing in R&D to promote innovation at every stage of production; Improving the business climate and reducing the costs of doing business; Mobilizing the large amounts of financing needed for physical and social infrastructure; Integration with Global Value Chains; and Ensuring environmental sustainability and climate resilience.

Trade regime for export diversification: As industry is expected to be the driving force behind high GDP growth, trade and industrial policies have to be geared towards making our industrial sector and exports more diversified. Export diversification faces two challenges: (a) problems with trade infrastructure, and (b) problems with the trade policy and the incentive regime. The weakness in trade infrastructure (ports, transportation infrastructure, and customs administration) is well known and affects all exports. Export competitiveness is sharply reduced by the high transaction costs relative to competitors related to infrastructure services as well as the inefficiencies of custom procedures. Turning this around will be a strategy for the immediate future. However, it is the trade policy regime that acts as serious constraint to diversification. The incentive system is heavily skewed in favour of manufacturing production for domestic sales rather than exports. The anti-export bias of the existing trade regime stifles diversification prospects. Given the successful experience of RMG, a strategy of export diversification needs to simply take lessons out of this success – provide non-RMG exporters with the same facilities as RMG, foremost among them is duty-free imported inputs.

To encourage the export of agricultural and agro-processed products to the international market, proper packaging, phytosanitary standards and quality must be ensured for high-value products like vegetables, fruits, potatoes, aromatic rice, shrimp etc. Moreover, efforts need to be taken for better processing of higher value-added food products by ensuring export quality. In this regard, proper support will be provided to the industrialists and exporters. Effective monitoring and evaluation will be strengthened from production to processing and delivery for enhancing export and building confidence of international buyers regarding products safety and nutritious value. In addition, Hortex Foundation will be strengthened to promote diversified agricultural export.

Along with a focus on expanding merchandise exports, efforts will also be made to increase services exports including shipping, air transport, ICT and tourism. The prospects for increasing earnings from tourism are especially large, which will also help create new jobs.

Future Trade Policy: The export-led growth philosophy underscores the need for setting up an incentive structure that overcomes the problem of serious policy-induced anti-export bias. The removal of anti-export bias, therefore, will largely depend on correcting the incentive structure so

that resources can be allocated between export and non-export sector on the basis of comparative advantage. Aided by the MFA which gave access to world markets, domestic policies designed exclusively for RMG industry, comprising special bonded warehouse and back-to-back LC, were able to soundly neutralize anti-export bias of a high tariff regime. Replicating these policies for non-RMG exports is the way to go as long as high tariff protection prevails. As the economy crosses the UMIC threshold and advances to HIC level, trade policy is destined to become more open, with seamless import and export flows, coupled with low and uniform tariffs.

True, the domestic market is expanding rapidly with a fast-growing middle class strengthening domestic demand. Over time, future trade policy must move towards neutrality between domestic and export markets, with a slight tilt for exports.

Challenges associated with the graduation from LDC status: Bangladesh is expected to finally graduate from the LDC status by 2024 putting our exports under stress due to significant preference erosion in key markets. Preliminary simulation results suggest that the loss of preferences in the markets of European Union, Canada, Australia, Japan, India and China in 2027 might lead to an annual reduction in total exports of Bangladesh by 11% or around USD 7 billion. Also, many of the exemptions of WTO provisions will no longer be available after 2024, except for EU which allows a transition period of three years for EBA preferences until 2027. Therefore, the country has to prepare itself over the next few years to counter these losses.

The employment challenge and strategies: The outcome of growth in terms of employment is critical in order to ensure that the fruits of economic growth get distributed amongst the people. For purposes of looking at the future in terms of employment prospects and challenges, the period up to 2041 may be divided into two broad phases: the first phase is expected to last till 2031 while the second phase is expected to start after 2031.

The notable demographic feature in Bangladesh is the increase in the share of working-age population that has taken place over time. This creates the opportunity of reaping the "demographic dividend" if, of course, the people of working age could be converted to human capital and employed in an effective manner for productive purposes. While attaining full employment has to be the major focus during the first phase, maintaining it alongside the quality of jobs will be the challenge for the second phase. Accordingly, the emphasis during the early period would have to be on structural transformation in the economy – especially, high growth of manufacturing and transfer of surplus labour to that sector, and reducing underemployment and employment in the informal economy through such a process. Simultaneously, progress has to be made towards improving conditions at work, providing social protection to workers and improving the situation regarding their rights at work. When the economy matures, the qualitative aspects would have to receive greater attention like ensuring full and productive employment and decent work for all on a sustained basis.

Overseas employment will continue to be a part of Bangladesh's employment strategy with a shifting focus on greater skill-intensive employment. For this purpose, a well-planned skills development program will be adopted commensurate with National Skills Development Policy keeping in mind skill demands in destination countries. Training Assessment Mechanism will be in place for

assessing whether the training given is enough to satisfy real requirements. Standard of training and accreditation will be raised to international levels by setting a minimum level of vocational training for every trade. Qualitative development of training programs in Training Centres with appropriate qualifications of the instructors will be ensured, and periodical assessment of their competency and resources requirements.

Enhancing women employment is important for building an inclusive society. It will also provide impetus to growth. According to a World Bank study, raising female labour force participation rate from the current 33% to 45% will raise GDP growth by an extra percentage point. To bring more women into the labour force a combination of measures will be adopted ranging from promoting the growth of sectors that are more amenable to their employment (e.g., labour-intensive industries like garments, shoes, electronics, etc.) to removing barriers to their employment and establishing infrastructure to facilitate their employment, affirmative action and direct intervention, providing maternity leave and child care.

The issue of technological progress and the prospect of automation under Industry 4.0 will also have to be taken into account in formulating a longer-term employment strategy. During the journey towards attaining the status of a developed and mature economy, policymakers will also have to confront the challenges of technological progress and its impact on the labour market. However, rather than taking a pessimistic view of the danger of job destruction, it would be advisable to adopt a pro-active policy so that the economy can benefit from the positive aspects of new and better jobs. The education and training system will have to gear itself to meeting such challenges so that the economy, as well as members of the workforce, can benefit from the positive aspects rather than fall victim to forces of job destruction.

Sustainable Power and Energy

Before 2009 Bangladesh faced a severe energy crisis owing to sluggish growth in energy supplies while the demand for energy rose rapidly with the acceleration of GDP growth. In response, PP2021 sought to secure a major expansion in the supply of power to sustain high growth while improving efficiency, increasing private participation and diversifying energy sources. Consequently, impressive gains were made in increasing power supply, growing at an average annual pace of 13.4% per year between 2010 and 2019, when generation capacity quadrupled from about 5000MW to over 22000 MW. If the present pace of power connection is sustained, it is expected that connectivity will reach 100% level by 2021. While this is the 2021 target of electricity for all, the continuation of progress remains truly remarkable given that less than 50% of the people had electricity only in 2010.

The objectives and targets set for PP2041 will put Bangladesh power and energy sector on a sustained path for a high-income economy. The main elements of the underlying strategies and policies are as follows: (i) Adopting a least-cost power generation expansion path; (ii) Promoting supply of low-cost primary energy; (iii) Developing the required infrastructure for primary fuel; (iv) Ensuring investment balance between generation, transmission and distribution; (v) Promoting efficient use of installed capacity; (vi) Promoting private investment in energy; (vii) Further expanding power trade; (viii) Ensuring proper energy pricing policy; and (ix) Strengthening power and energy institutions.

A core objective of the PP2041 power and energy strategy would be to eliminate the existing demand gap while meeting the new demand. Bangladesh already has considerable experience with developing a Power Sector Master Plan (PSMP). The PP2041 will develop a power expansion strategy in line with the 2016 PSMP and update this strategy every 5 years based on the lessons of experience.

To ensure that the benefits of power production are well distributed to all parts of Bangladesh so that the target of 100% electrification is achieved, power generation must be balanced with proper investments in transmission and distribution. PP2041 will place a strong emphasis on this so that there is no waste in terms of idle generation capacity and district-level power constraint to development is eliminated. Considerable progress was made under PP2021 in expanding the role of the private sector in power generation. The PP2041 will build on this to enhance private involvement in power generation, transmission and distribution. Finally, Bangladesh will seek to considerably expand power trade options at competitive prices from all three neighbouring countries. The broadening of imports from Bhutan and Nepal will also help lower the risk of power supply disruption from conflict and accidents. The generation programmed over the 20 years between FY2021 and FY2041 calls for a massive 62 thousand MW of capacity build up, which is an annual average expansion of 3100 MW per year. Finally, developing renewable energy will be a key focus of PP2041 strategy.

Creating an Innovation Economy

Having driven by growth with labour advantage over last two decades, it is now time for Bangladesh to ride over the technology, innovation and digital opportunities to attain higher growth acceleration to reach upper-middle-income status by 2031 and to reach the advanced economy status by 2041.

Digital Opportunities and Innovation: Digital Bangladesh is an integral part of the government's Vision 2021 and Vision 2041. The Digital Bangladesh initiative includes: (i) Developing human resources ready for the 21st century, (ii) Connecting citizens in ways most meaningful to them, (iii) Taking services to citizens' doorsteps and (iv) Making the private sector and market more productive and competitive through the use of digital technology. Technologies like artificial intelligence, robotics, quantum computing and 3D printing are upending everything from agriculture to manufacturing to healthcare. Among different technologies, Robotics, and Automation are going to have a significant impact on jobs and the future of work. The challenge is how to leverage transformational technologies to create more gainful jobs than is likely to be lost.

Leveraging the Fourth industrial revolution: for strengthening competitiveness and creating high-income future work opportunities will lead to the prosperity of Bangladesh. Constantly jobs are being eaten up by advanced automation, and according to demonstrated technology potentials, most of the manual jobs in the RMG sector are vulnerable to automation. To counter this trend the government, leading companies, civil society, youths, entrepreneurs, politicians, start-ups and experts from all across the society will have to co-design and pilot innovative new approaches to policy and governance to counter negative implications and leverage Fourth Industrial Revolution. By 2041, Bangladesh will set targets such that the benefits from the fourth industrial revolution are 50 percent more than the likely loss. The focus should be on integrating big data, data analytics, AI, and automation in creating more jobs than likely to be lost on the factory floor. In reality, the entire education ecosystem may have to be redesigned to address the dynamically changing issue.

Moving from factor-driven stage to innovation-based economy should be the paradigm shift in growth drivers for achieving 2041 vision of Bangladesh. Changing production priorities from replication and imitation of simple products to innovation, for driving process and product sophistication and increasing TFP contribution to economic growth, should be given due priority. Bangladesh faces a daunting challenge in strategizing the formation of an innovation economy so that its economic growth from TFP contribution keeps improving from exiting 0.3 percent to reach 4.5 percent by 2041. A three-prong strategy will be needed: i. Software and process innovation, and service digitization, ii. Fusion of labour advantage with science and high-tech innovation, and iii. Leveraging fourth industrial revolution - AI and smart machines for competitiveness and low carbon economy. Moreover, the government needs to gradually move away from direct service delivery and more towards creating enabling digital platforms and infrastructure that enables the private sector, civil society and academia to partner and meet citizen's needs for modern personalized services.

The national digitization effort will need to accelerate its maturity to ensure:

i. Services across multiple departments are able to 'talk' to one another (service interoperability)
ii. Payments across different types of banking and non-banking financial institutions are completely seamless (payments interoperability)
iii. Physical and virtual access points are within easy reach of every underserved citizen (unified access)
iv. All service providers and financial institutions unambiguously identify every citizen (unique IDs)

All government agencies will accelerate simplification of service delivery and adoption of innovation and digitization through a structured, multi-stakeholder engagement process that can expedite procurement, capacity development, implementation, maintenance and upgrades.

Data plays a critical role in measuring development progress, planning development interventions and addressing exclusion. It will therefore be paramount to leverage the emerging data revolution to ensure evidence-driven policymaking to leapfrog progress, enable improvement of existing services and creation of new services.

At the same time, the potentially powerful negative side effects of technology will need to be proactively, continuously and adequately dealt with to ensure the economic growth is sustained and social cohesion is strengthened. Alarming phenomenon such as the proliferation of fake news and control of personal data by mega corporations have to be addressed with citizen-centric regulation and mass digital literacy.

Building Transport and Communications Infrastructure for sustained growth

In today's globalized economy, low-cost and efficient transport service is a major determinant of the competitiveness of the economy that influences trade and investment flows both internally within a country and externally. Development of an efficient and low-cost transport network is, therefore, a key determinant of the ability to achieve the growth and poverty targets of PP2041.

The acceleration in growth under PP2041 and the diversification of the export basket will require strong improvements in trade logistics related to factory to port movements and timely inflow of imports of capital machinery and intermediate imports from ports to factory gate. The transport strategy for PP2041 will build on the lessons of experience of the implementation of the PP2021. An important priority will be to address the implementation gaps of the PP2021 strategy. The other priority will be to address the major institutional constraints that have hampered implementation of transport projects. A third priority is the reform of the Public-Private Partnership (PPP) strategy with a view to achieving stronger progress under PP2041. Finally, one of the important lessons of the PP2021 is that Bangladesh needs to be more strategic about identifying major transport projects and then allocating resources accordingly.

The Transport Sector Strategy for PP2041: will focus on: (i) Strengthening long-term planning and priority setting; (ii) Improving inter-modal transport balance; (iii) Strengthening implementation capacity; (iv) Introducing a time saving electrical Urban Mass Transit / Metro Rail Network to reduce urban traffic congestion and improve the natural environment; (v) Ensuring sustainable financing of transport infrastructure; (vi) Developing and implementing key policies for ensuring quality and reliability of transport services; (vii) Strengthening management capabilities and efficiency of public transport authorities; and (viii) Implementing and operating modern transport facilities in line with the traffic needs of 2041.

Communications development strategy: PP2041 will build on the success of PP2021 and continue to modernize communications in Bangladesh. The PP2041 strategy will continue to provide policy and institutional support to private investment in expanding telecommunications network and services, boost the expansion of private print, audio and video media, and provide an enabling environment for competitive and healthy expansion of communication services and knowledge and information sharing. The PP2041 will implement the provisions of the Right to Information Act that supports the growth of an informed and democratic society.

Managing the Urban Transition

Urbanization and development are highly and positively correlated. Urbanization and economic growth will, therefore, go together in the future. The PP2041 stipulations for the urban sector is to (a) Have an economy where some 80 percent of the population lives in urban areas; (b) An urban physical environment where there is a proper balance between ecology, the natural environment and needs of the urban population; (c) An urban social structure where there is no incidence of absolute poverty, and there are no slums; (d) An urban service industry that provides quality urban infrastructure and urban services on demand and in good quality; and (e) An urban governance structure that is elected by the residents, is responsive to the needs of the residents, and is largely self-financing with a healthy and sustainable combination of urban betterment taxes, predictable national government transfers, cost recovery from services provided and responsible borrowings.

Urban Governance Reform: The PP2041 recognizes that in a market economy urbanization will be linked to the growth of economic activities. The role of public policy to influence the pattern of urbanization will depend upon incentives, regulations, public investments and institutions. Global experience clearly shows the need for decentralized and autonomous urban governments as a key part of the political and administrative layout underlying a HIC. A sound strategy for reforming

city management calls for a three-pronged approach: (i) redefining public-private roles with a view to strengthening this partnership for better services; (ii) strengthening capabilities of public urban service institutions; and (iii) establishing an accountable city government.

PP2041 Urban Sector Financing Requirements and Options: The funding needs of the urban sector are large. Reflecting on the financing needs of the urbanization agenda, the PP2041 projects that the investment programme for the urban sector will grow from 2.4% of GDP now to 5% of GDP by FY2031 and 7% of GDP by FY2041. This is a huge increase and the ADP alone cannot finance this even with the solid progress in tax mobilization. Two other financing strategies will be necessary. The first involves private financing and the second involves a strong cost recovery programme for urban services. While local government tax resources will help finance operating costs of the city government and spending programs on public goods like local roads, drainage systems, parks and maintenance of water bodies, cost recovery will play a dominant role for such services as water supply, sewerage and solid waste disposal.

Managing Environment and Climate Change for sustainable growth

Many laws and regulations have been enacted over the years to protect the environment and programmes and policies are in place to adapt and mitigate the adverse effects of climate change. This progress continued under the 6th FYP and 7th FYP, with special emphasis on air and water pollution control. Important steps were also taken to improve biodiversity. An important breakthrough on the strategy and policy front happened recently with the adoption of the Bangladesh Delta Plan 2100 in September 2018. This is a comprehensive strategy for managing the risks posed by the deltaic formation of the country along with the incidence of natural disasters and climate change.

Fundamentally, the main focus of the PP2041 environmental management strategy would be to integrate environment and climate change considerations in the growth strategy. So, essentially, under PP2041 Bangladesh will adopt a green growth strategy. The specific strategies, policies and institutional reforms include: (a) Integrating Environmental Costs into the Macroeconomic Framework; (b) Implementing the Delta Plan to Build Resilience and Reduce Vulnerability to Climate Change; (c) Reduce Air and Water Pollution; (d) Removal of fuel subsidies; (e) Adoption of green tax on fossil fuel consumption; (f) Taxation of emission from industrial units; and (g) Prevention of surface water pollution; (h) Geo-spatial data analysis for evidence based decision making

Although environment typically is a public good, the public sector alone cannot finance it. Innovative solutions must be found to ensure a good division of financing options between public and private sectors. PP2041 will focus on various financing options such as: private financing options, public financing policies, tapping the Green Climate Fund (GCF) and mobilizing resources from other global funds.

Going forward

The remarkable development progress made under PP2021 is a testament to the dynamic leadership of Prime Minister Sheikh Hasina. The country is now well placed to push forward and secure Bangabandhu's dream of a poverty-free Bangladesh and achieve HIC status under PP2041. This PP2041 document puts together a strategy, policies and programmes that will guide Bangladesh to

this inspiring development path. The challenges are steep but not insurmountable. The foundation stone has already been laid under PP2021 and a road map developed under PP2041. The next step is to strengthen the institutions, develop an implementation plan and move full steam with the implementation of PP2041. As illustrated by the experience of PP2021, Bangladesh already has a strong track record that shows how strong leadership, a sound planning strategy and determined efforts can take the country forward. With continued strong and determined policy leadership by Prime Minister Sheikh Hasina, the PP2041 challenges can also be met and fully addressed.

Table of Contents

List of Tables

List of Figures

Acronyms

ADB	Asian Development Bank
ADP	Annual Development Programme
AEOSIB	Association of Export Oriented Shipbuilding Industries Bangladesh
AI	Artificial Intelligence
ANS	Air Navigation Services
BADC	Bangladesh Agricultural Development Corporation
BASIS	Bangladesh Association of Software and Information Services
BBS	Bangladesh Bureau of Statistics
BBIN	Bangladesh, Bhutan, India, Nepal
BDP	Bangladesh Delta Plan
BERC	Bangladesh Energy Regulatory Commission
BGMEA	Bangladesh Garment Manufacturers and Exporters Association
BIDA	Bangladesh Investment Development Authority
BIWTA	Bangladesh Inland Water Transport Authority
BOP	Balance of Payment
BORI	Bangladesh Oceanographic Research Institute
BRT	Bus Rapid Transit
BTMA	Bangladesh Textile Mills Association
BWDB	Bangladesh Water Development Board
CCTF	Climate Change Trust Fund
CFID	Centre of Integrated Development
CA	Conservation Agriculture
CIF	Climate Investment Fund
CoE	Centres of Excellence
CSE	Chittagong Stock Exchange
CSO	Civil Society Organization
CTT	Coal Transshipment Terminal
CWU	Consumptive Water Use
DOICT	Department of ICT
DSE	Dhaka Stock Exchange
EC	Electronic Commerce
ECA	Ecologically Critical Areas
EDI	Electronic Data Interchange
EEBL	Excelerate Energy Bangladesh Limited
EEZ	Exclusive Economic Zone

EFA	Education for All
EFFRA	European Factories of the Future Research Association
EPZs	Export Processing Zones
ERD	Economic Relations Division
FCG	Final Consumer Goods
FDI	Foreign Direct Investment
FIP	Forest Investment Program
FIR	Fourth Industrial Revolution
FSRUs	Floating Storage and Re-Gasification Units
FTAs	Free Trade Agreements
FY	Fiscal Year
GAP	Good Agricultural Practices
GCF	Green Climate Fund
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GHG	Greenhouse Gas
GVCs	Global Value Chains
HEIS	Household Income and Expenditure Survey
HEQEP	Higher Education Quality Enhancement Project
HIC	High-Income Country
HYVs	High-Yielding Varieties
ICS	Improved Cook Stoves
ICT	Information Communications Technology
IDCOL	Infrastructure Development Company Limited
IFFP	Investment Financing Facility for Private sector
INDCs	Intended Nationally Determined Contributions
ICOR	Incremental Capital Output Ratios
IoT	Internet of Things
IPM	Integrated Pest Management
IPNS	Integrated Plant Nutrition System
IPP	Independent Power Plant
IPCC	Inter-Governmental Panel on Climate Change
ISAC	Industrial Sector Adjustment Credit
ITS	Intelligent Transportation Systems
JWG	Joint Working Groups
KOICA	Korean International Cooperation Agency

LDC	Least Developed Country
LDCF	Least Developed Countries Fund
LGIs	Local Government Institutions
LLPs	Low-Lift Pumps
LMIC	Lower Middle-Income Country
LNG	Liquefied Natural Gas
MDG	Millennium Development Goals
MFIs	Micro-Finance Institutions
MFA	Multi Fibre Arrangement
MGI	McKinsey Global Institute
MIT	Middle-Income Trap
MIC	Middle Income Country
MIE	Multilateral Implementation Entity
MMT	Million Metric Tons
MOE	Ministry of Education
MoPA	Ministry of Public Administration
MSME	Micro Small and Medium Enterprises
MSY	Maximum Sustainable Yield
MTBF	Medium-Term Budget Framework
NAMA	Nationally Appropriate Mitigation Action
NBR	National Board of Revenue
NBFI	Non-Bank Financial Institutions
NDA	National Designated Authority
NEMC	National Environment Management Council
NFS	Non-Factor Services
NFE	Non-Formal Education
NGO	Non-Governmental Organisation
NIE	National Implementation Entity
NORI	National Oceanographic Research Institute
NPR	Nominal Protection Rate
NSDP	National Skills Development Policy
NSSS	National Social Security Strategy
NTVQF	National Technical and Vocational Qualifications Framework
OTI	Oman Trading International
PHN	Population Health and Nutrition
PP	Perspective Plan
PPP	Public-Private-Partnership

PSMP	Power Sector Master Plan
RD	Regulatory Duty
REDD	Reducing emissions from deforestation and forest degradation
REER	Real Effective Exchange Rate
RMG	Readymade Garment
RTI	Right to Information Act
RTAs	Regional Trading Arrangements
SAFTA	South Asian Free Trade Area
SBA	Small Business Authority
SBDA	Small Business Development Authority
SD	Supplementary Duty
SDG	Sustainable Development Goal
SEZs	Special Economic Zones
SEIP	Skills for Employment Intensive Program
SHS	Solar Home System
SMEs	Small and Medium Enterprises
SPA	Sales Purchase Agreement
SPS	Phyto-Sanitary Standards
SREDA	Sustainable and Renewable Energy Development Authority
TFP	Total Factor Productivity
TRIPS	Trade Related Aspects of Intellectual Property Rights
TSP	Triple Super Phosphate
TSMP	Transport Sector Master Plan
TVET	Technical and Vocational Education and Training
UGC	University Grants Commission
UMIC	Upper Middle-Income Country
UN	United Nations
USG	Urea Super Granule
VAT	Value Added Tax
VTMS	Vessel Traffic Management System
WASA	Water Supply and Sewerage Authority
WGI	Worldwide Governance Indicators
WTO	World Trade Organization

CHAPTER 1

VISION 2041: TOWARDS A HIGH-INCOME ECONOMY

VISION 2041: TOWARDS A HIGH-INCOME ECONOMY

1.1 Our Startling Beginning

Bangabandhu Sheikh Mujibur Rahman the Father of the nation was a pragmatic and visionary leader who set a mission for changing the economy of post-independent country keeping social equity at the forefront in his thoughts. Bangabandhu Sheikh Mujib's development dream was to build a prosperous Bangladesh, free from poverty, hunger, corruption and exploitation. His vision was to establish Sonar Bangla that he ingrained in his heart throughout his life.

The phrase 'Sonar Bangla' was very common in his speeches and writings of Bangabandhu Sheikh Mujib well before the independence of Bangladesh. 'Sonar Bangla' was not a mere political rhetoric for Bangabandhu Sheikh Mujib but he dreamt it by his heart and soul. This aspiration was based on his perception about the past glory and fame of this land. He knew that only a few centuries back Bangladesh was really a land of prosperity, a golden country. This country was famous for its agricultural production; famous for its exports like muslin, silk, cotton and spices.

Bangabandhu Sheikh Mujib knew that the country was in a dire situation after the liberation war as the invading army destroyed all of our infrastructure and endowments including organized killings of the intellectuals to make the country bankrupt economically and intellectually. But he also could comprehend the potential of the people that fought with hard determination to liberate our motherland. The brave people of Bangladesh have the fortitude to overcome all the hurdles and turn the tide to achieve his development dream. He was firm enough in uniting the people and led them towards the desired direction of inclusive development. His dream for a prosperous and inclusive Bangladesh was rightly reflected in the 1972 Constitution of the Republic. He was fully committed to lead the country in this direction and was well on his way. Within only a few years after independence, he succeeded in materializing the growth potential of Bangladesh to a significant extent.

We must keep in mind that he took over an economy of only worth of eight billion US dollars in 1972, which now stands at US$ 302 billion. There was not even a dollar in foreign exchange reserve. But thanks to his committed leadership the economy started moving forward despite many insurmountable challenges including war-ravaged physical and social infrastructures and virtually no regulatory institutions.

Bangabandhu Sheikh Mujib as the Prime Minister tried to rightly prioritize agriculture and industrialization as the forces to rely on. He understood that agriculture would not only provide food to feed the people, but also would remain as the main source of income for the majority of the people for many years to come. In addition, fast reductions of poverty, vibrant agriculture can also ensure the supply of raw materials for a burgeoning industrial sector. Immediately after the independence of the country, Bangabandhu Sheikh Mujib, therefore, took courageous initiatives to ensure agricultural growth.

Few of those initiatives were: rebuilding the war-ravaged economy, ensuring supply of agricultural equipment on emergency basis free of cost or at concessional rates, ensuring adequate supply of seed, cancelling 1 million certificate cases for loan default against farmers filed during the Pakistan period,

fixing minimum fair prices for agro-products, introducing ration facilities for poor and marginal farmers etc. He took those steps as he believed that agricultural development was then the most important prerequisite for sustainable and inclusive development of the country.

Bangabandhu Sheikh Mujib prepared a roadmap for a modern state based on the planned development and assembled all the important development practitioners and thought leaders. The First Five Year Plan (1973-1978) successfully embodied his dream of establishing the country as a role model of sustainable and inclusive development. Major objectives of the plan were: i) to reduce poverty, ii) to continue and complete the work of reconstruction, and to raise outputs in major sectors of the economy, iii) to increase GDP growth rate at least 5.5 percent per annum, iv) to expand the output of essential consumption items, v) to arrest the rising trend in the general price level, vi) to increase per capita income at the modest rate of 2.5 percent per annum, vii) to attain self-sufficiency in food-grain production and to reduce the population growth rate. This plan, as he called, was *a plan for reconstruction and development of economy taking into account the inescapable political, social and economic realities of Bangladesh (Foreword, First Five Year Plan (1973-1978).* Bangabandhu Sheikh Mujib also mentioned, "*A plan is not merely a technical and an economical document but also a sociopolitical document. It must be able to enthuse, mobilise and motivate people. It must provide with a vision and perspective for the nation" [The First Five Year Plan (1973-78) of Bangladesh].* Within a short period of three years and a half Bangabandhu Sheikh Mujib set the golden path of a nation towards prosperity through socioeconomic upliftment. Unfortunately, the country lost her golden son, as the anti-liberation forces aided by international conspirators killed Bangabandhu Sheikh Mujib and all most all members of his family when he was about to embark on to take the country to massive development pathway.

The legacy of Bangabandhu Sheikh Mujib is now being carried forward with able and farsighted leadership of Prime Minister Sheikh Hasina paving the way to fulfillment of a long cherished dream of Sonar Bangla by Bangabandhu Sheikh Mujib. Under her able leadership, Bangladesh has moved forward to a lower- middle income country and aspiring to achieve a status of a developed country by 2041. Bangladesh is now well on course to achieve its development aspirations towards becoming a prosperous country and this vision document is a cherished road map of that.

1.2 The Setting for Rapid Transformation

Situated at the cusp of the 50th anniversary of Bangladesh independence, this is an opportune time not merely to reflect on the progress and achievements of the past but to also prepare to address the challenges and seize opportunities that will present themselves over the next 20 years. In this 21st century, there is one indisputable phenomenon. The pace of change is rapid, and often transformational. Over the next half-century, Bangladesh economy and society will have to cope with transformational shifts in trade and industry, in education and healthcare, in transportation and communication, and in the way we work and conduct business; and change will come with so much rapidity that unless the society prepares to address these oncoming impacts of transformation, we might be once again left in the backwaters of the new global order of things. Hence, it is only apt that the nation should gear itself to be fully prepared to address the challenges head on and seize opportunities with vigour so that future generation of Bangladeshis takes their rightful place in the

comity of nations with high-income and advanced societies. All this should happen by mid-century, within a climate-resilient and eco-friendly geographical region. That is the embedded and ultimate goal of designing the next twenty-year perspective plan for the period 2021-2041.

Two principal visions underpin the PP2041:

- Bangladesh will be a developed country by 2041, with per capita income of over USD 12,500 in today's prices, and fully in tune with the digital world.
- Poverty will become a thing of the past in *Sonar Bangla*.

Not surprisingly, international analysts are describing Bangladesh as the "poster-child" of development, a significant upgrade from the 1970s ubiquitous stamp of "a test case of development". Bangladesh today is a shining example of a development miracle, having earned international acclaim on its tremendous success in attaining MDGs, particularly in the areas of poverty alleviation, food security, gender parity in primary and secondary education, infant and under-five mortality, and maternal mortality. The gains in human development could now further fuel economic growth through a virtuous circle and positive synergies. Thus, the economy is poised for higher attainments. Understandably, the challenges are formidable calling for robust strategies and steadfast policy commitment all the way.

The global business community now recognizes Bangladesh as a nation of dynamic first-generation industrial entrepreneurs who can compete with established players in the world market. The export performance of readymade garments (RMG) has been exemplary and exporters are breaking into new markets with new products such as ocean-going vessels, consumer electronics, footwear and a variety of home appliances. Building on this progress, the nation is marching on to move up to Upper Middle-Income country (UMIC) by 2031, and attain High Income Country (HIC) status by 2041. All this will be possible as Bangladesh moves to harness its vast population resource by converting its demographic dividend into formidable human capital for future transformation of the economy and society. Bangladesh is also acutely aware of the vulnerabilities it faces from its deltaic geography, environmental degradation from population pressure, and climate change. Therefore, maintaining environmental and ecological balance throughout the development process remains and will remain a cardinal policy principle. Accordingly, the PP 2041 seeks to ensure the long-term sustainability of growth through the adoption of a green growth strategy that fully reconciles growth, technological transformation, poverty reduction, and environmental protection within a sound macroeconomic framework that enshrines fiscal prudence imbued with growth dynamism.

The transition - indeed transformation - can be realized through a process of rapid inclusive growth leading to the elimination of poverty while increasing the productive capacity, building an innovating knowledge economy and protecting the environment. The cornerstone of an inclusive and sustainable development strategy is a robust program of job creation through export-oriented manufacturing growth backed by digital technology of the knowledge economy while ensuring that the key natural resources like land, water, forestry, natural habitat and air are used in a manner that avoids their depletion and degradation.

No doubt the country faces daunting challenges. The transformation will be taking place in the context of a global economy that is undergoing profound change, creating opportunities but also facing serious downside risks from economic, political and social conflicts and climate change. A fast-paced technological revolution, the digital age, is ongoing that will eventually change the way we live, work, and interact with the global community. As against this positive development, the resurgence of nationalism of the late 19th and early 20th-century variety in many advanced economies and the rising risks of global conflicts are threatening to disrupt global trade, commerce and finance.

Over the next 20 years, Bangladesh's socio-economic transformation will be much more fundamental than anything experienced in the past 20 years. Properly harnessing and negotiating the positive global forces to advantage and ability to countering the adverse factors will enable Bangladesh to grow at higher rates in future that was simply not possible before. A strong positive growth-generating factor is the aspirations of poor people for upward mobility. In these evolving circumstances, building an inclusive society with shared prosperity in a sustainable manner will require ever-greater ingenuity, innovative strategies, strong institutions, social equity and participation, and good command over cutting-edge technologies to unleash the full potential of Bangladeshi entrepreneurs to create good jobs and grow the economy out of poverty and on to prosperity.

To make all this happen, programs and institutions will have to be put in place to generate rapid, inclusive and sustainable growth. By 2041 the expectation is that the economy will have joined the ranks of High-Income countries when poverty will be a thing of the past, people will have access to universal healthcare, under-employment and low-income will have been eliminated, the population will be literate and endowed with the knowledge of the latest technology in all spheres of economic activity (particularly in education, industry and services). And all this will be achieved without damaging the environment so that land, water and forestry resources are preserved, and citizens have access to clean air, safe water, green space and bio-diversity.

1.3 Strategic Goals and Milestones of the PP2041

The following strategic goals will be pursued as the essential components of economic policy over the long-term:

- Eradication of Extreme Poverty by 2031; reducing Poverty to less than 3 percent by 2041
- Towards Upper middle-income country by FY 2031; High-income country by 2041
- Industrialization with export-oriented manufacturing will drive structural transformation into the future
- Paradigm shifts in Agriculture will enhance productivity and ensure nutrition and food security for the future
- A Service sector of the future will provide the bridge for the transformation of the rural agrarian economy to a primarily industrial and digital economy
- The Urban transition will be an essential part of the strategy to move to a high-income economy

- Efficient Energy and Infrastructure will be essential components of the enabling environment that facilitates rapid, efficient and sustainable growth
- Building a Bangladesh resilient to climate change and other environmental challenges
- Establishing Bangladesh as a knowledge hub country for promoting a skill-based society

The ensuing chapters lay out the approach and strategies for attaining the above goals and milestones over the protracted period of twenty years that will encompass four five-year Plans, taking the nation out of its current state (LDC and Lower Middle-Income) to the threshold of a High-Income country by 2041. In the interim, Bangladesh will have crossed a major threshold – graduating out of LDC status in 2024. But LDC graduation is not a panacea. There are genuine concerns that though the business-as-usual process of economic and social development might lead Bangladesh to graduate from the LDC status by 2024, such business-as-usual process will certainly not lead to achieving the much larger and important development goals. Becoming a non-LDC and graduating from the current status of 'lower-middle-income' country to an 'upper-middle-income' country is not the same, and therefore, avoiding the 'middle-income trap' would be a forthcoming challenge. On top of all these, attaining the stiff targets of SDGs by 2030 would be a challenging task for Bangladesh. The changing global and regional scenarios also appear to be much more challenging. All these suggest that Bangladesh has to make some extraordinary efforts in its economic and social development process in the days to come.

CHAPTER 2

ENSURING GOOD GOVERNANCE INSTITUTIONAL FOUNDATIONS OF A HIGH-INCOME COUNTRY

ENSURING GOOD GOVERNANCE INSTITUTIONAL FOUNDATIONS OF A HIGH-INCOME COUNTRY

2.1 Institutions Matter for Development

Rapid and inclusive development of societies is driven by strong and effective institutions. This is the conclusion of historians and economists alike. At the end of the day, it is institutions of all types and forms that are the determinants of prosperity or decline of societies. According to leading institutional experts, developed countries of today have had the benefit of strong and viable institutional frameworks that promoted and sustained development over long periods of time. By that logic, under-development could be the consequence of weak or dysfunctional institutions. Overall, a variety of research evidence points to the fact that broad institutional differences across countries could explain the differences in their income levels. Thus, institutions are critical because they are key determinants of the level of development. The reason for many countries lagging behind others in the field of economic development can be attributed to the fact that the institutions critical for growth there are either missing or dysfunctional.

Economic institutions matter for economic growth because they shape the incentives of key economic actors in the society. In particular, they influence investments in physical and human capital, foster innovation and technological advance, and promote the organization of production systems. Economic institutions and the state of economic governance play a catalytic role in achieving rapid growth in developing economies vying to bridge the gap between them and the developed countries. Some countries do undergo political transitions, reform their institutions, and move onto more successful paths of economic development. Bangladesh is among one such group of developing countries that must resuscitate its institutions in order to target and sustain higher economic growth on way to reaching high-income country status in a matter of two decades.

Furthermore, political institutions are just as important because they usually tend to determine how political power will be distributed and how economic institutions will be shaped along the road to progress. The political, executive, and business leadership which emerges from the broad political process plays the decisive role in creating and reforming developmental institutions (administrative, judicial, economic and market), which ultimately set the groundwork for social and economic progress. In this regard, there is historical evidence that pluralistic democratic institutions have had a positive influence in fostering stable progress in nations for the long-term.

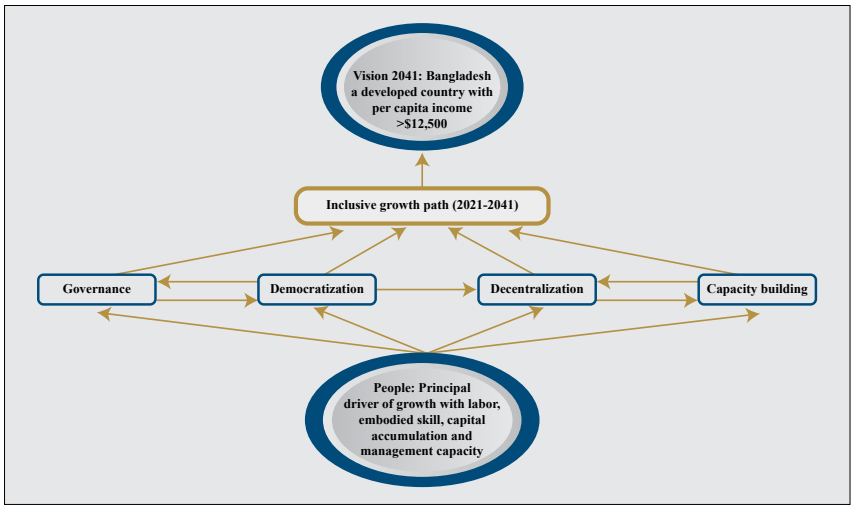
The state also has a key role to play in all societies. Many of the institutions that promote development are publicly provided. The ability of the state to nurture these institutions so that they have an effective and positive influence on the functioning of markets and on the investment climate is, therefore, an important determinant of how well healed is the growth and distribution mechanism in a society. Good governance is the *sine qua non* for rapid progress and poverty reduction in developing countries with a substantial population below the poverty line. To ensure good governance, the state has a strategic responsibility to provide effective institutions that support growth and poverty reduction. Though Bangladesh has chosen the path of market-oriented development, the state still has the primary responsibility to nurture effective development institutions to support the long and tedious march to

high-income country status by 2041. Failure to build sound development institutions could rob the country and its people of the opportunity of reaching the coveted goal.

2.2 The Institutional Pillars of Vision 2041

VThe Vision 2041 relies on four institutional pillars that will be pooled together by the people, the principal driver of growth and transformation (Figure 2.1). These are (i) governance; (ii) democratization; (iii) decentralization and (iv) capacity building. Bangladesh's path to prosperity as a developed nation with a per capita income of USD 12,500 by 2041 must be founded on these four pillars. The ultimate purpose of these pillars is to involve the people – (i) to ensure that an increasing number of people are benefitted by the government and the quality of the services which they receive continue to get better; (ii) all adult citizens are freely allowed to express their choice regularly regarding how the country will be run and who will run it on their behalf; (iii) people in lower levels of the administrative structure (Divisions, Districts, Upazilas and Unions, in addition to City Corporations and Municipalities) are given more authority (power) and resources (money) to adhere to the needs of their jurisdictions, and (iv) increasing the capabilities of those working for different relevant organizations in order make them work better. Combination of these four pillars should lead to an "inclusive growth path" from 2021 until 2041 when Bangladesh will become a developed country with a per capita income of USD 12,500 or more (at 2019 USD).

Figure 2.1: Four Institutional Pillars of Vision 2041



2.3 Institutions that Matter and Why

Sustainable, shared, poverty-reducing development has five crucial ingredients: (i) a foundation of law; (ii) a supporting policy environment, including macroeconomic stability; (iii) investment in people and infrastructure; (iv) protection of the vulnerable, and (v) protection of the natural environment. The combined outcome of these constituent factors is facilitated by institutions. The more effective the institutions, better the development outcome. Institutions provide the setting for individuals and groups to benefit from development interventions. Because institutions are the intermediaries through which laws and regulations are made and implemented, decisions are agreed upon and carried out, and public and private investment plans are carried. Nobel laureate economist Douglass North (1991) summarized the role of institutions, "institutions are the humanly

devised constraints that structure political, economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)." Drawing from this perception of the comprehensive impact of institutions on social transformation, it is only apt that PP2041 takes on board the pivotal role of institutions in shaping a tenure of inclusive development over the next twenty years.

a. Institutions for Economic Governance and Their Contribution to Growth

One unique feature of Bangladesh's respectable growth over the past decade has been its prudent macroeconomic management that ensured both internal (fiscal) and external (balance of payments) stability. The relationship between growth and macroeconomic stability is well known. Empirical work has shown that high rates of inflation (above single digit) adversely affect growth. High inflation creates uncertainty about the returns on saving and investment, thus creating a disincentive for capital accumulation. Inflation also makes it difficult to maintain a stable but competitive exchange rate, impeding the country's ability to exploit the benefits of openness and creating wage volatility.

Credit for this growth and macroeconomic stability should go to the different actors and institutions operating together in Bangladesh – the private sector (especially the garments industry), the government (especially the Ministry of Finance, Bangladesh Bank, National Board of Revenue, Ministry of Commerce and the Export Promotion Bureau) and the working population (those working in the garments industry at home and in developed countries abroad to earn and remit foreign exchange back home).

b. Commitment for Strategic Trade Integration with World Markets

In a market economy, institutions governing trade and investment are important catalysts for progress. What has changed is the strategic trade integration of nations with the world economy – a symptom of globalization – which has been instrumental in providing the impetus to high growth in the 20th and 21st centuries. In the post-war world, trade has been the driver of income growth around the globe. It is also supplemented by capital and investment flows across borders, creating jobs from the vastly expanding world market linked through value chains in the production of goods and services.

For Bangladesh to benefit from this expanding market over the years, it is essential to maintain liberal trade, capital markets, and investment regimes in order to convert global market integration into higher growth at home. Open markets offer opportunities for citizens and businesses by increasing access to massive global markets, supplies, equipment, technology, and finance. Trade linkages with the world economy also help domestic prices adjust to global market conditions so that prices reflect the scarcity values of goods and services. And improved incentives and opportunities allow entrepreneurs to use resources more efficiently. The position of Bangladeshi garments in today's world market speaks volumes about how the country has engaged itself in international trade. It is now the turn of the other 1300 non-garment export products to reach significant export volumes so as to create millions of jobs like the readymade garment sector. Export diversification will have to be the cornerstone of trade policy in the foreseeable future. For that to happen, not only must Bangladesh continue to seize opportunities to access new markets abroad but also reformulate domestic trade policies such that incentives between exports and domestic sales are sufficiently balanced to give export production of non-garment products sufficient incentives to overcome the

urge to sell only in the domestic market. Because, profit margins are kept artificially high by dint of high tariff protection.

In addition to providing support to this export base, the government has been trying to make Bangladesh a more attractive investment destination, especially through organizations/agencies like the Bangladesh Investment Development Authority (BIDA), Special Economic Zones (SEZs), and Export Processing Zones (EPZs). Although Bangladesh has had two bourses – the Dhaka Stock Exchange (DSE) since 1954 and the Chittagong Stock Exchange (CSE) since 1995, they are yet to play the role which capital markets have played in other countries. These bourses will have to be strengthened so that equity markets in the future play a much larger role in mobilizing investible resources thereby reducing the burden on the banking system alone.

c. Land Market, Property Rights, Labor Laws and Working Conditions

An efficient land market with effective property rights is a key institution for longer-term development. Property rights are most relevant for land, business and intellectual property. Marketing regulations are diverse dealing with land, labour, capital, product and services. These regulations are of necessity work in progress subject to regular review and adjustments and amendments consistent with structural transformation underway. The role of labour and industrial laws is of paramount importance. The protection of labour rights, resolution of labour disputes, rights of labour to unions, health, security and safety of working conditions, minimum wage protection, training and labour mobility, protection of migrant labour are all critical issue to be considered.

To create the supportive environment for markets to function efficiently, the following goals will be pursued: (i) effective land governance and administration, (ii) effective implementation of the 2010 Labor Law with 2013 amendments, (iii) securing property rights including intellectual property, and (iv) marketing regulations ensuring operation of the free market principles with appropriate checks and balances removing all barriers to entry. The perception indicator will be 'the quality of land management'.

d. Taxation Management

For the state to provide the institutions that support markets, it requires resources. Access to resources, in turn, depends on the effectiveness of the institutions of taxation. In many countries around the world, especially poor countries, these institutions do not function adequately. When tax collection is low, the state does not have the resources necessary to build the institutions needed for markets to function effectively. Weak tax collection of institutions undermines well-functioning markets in several ways.

The government has been working to broaden the tax base in Bangladesh. The National Board of Revenue (NBR) regularly organizes events to enrol new taxpayers and encourage existing taxpayers to pay their due share accordingly. There is no alternative to expanding the tax base – a country cannot develop and become a high-income country if it does not have a broad tax base within a modern and digitized tax system. Given that Bangladesh has among the lowest tax-GDP ratios, a long agenda for tax reform awaits the institution that collects taxes – National Board of Revenue. Urgent reforms will have to be undertaken over the next decade in order to catch up with the mounting public investment program that will be part and parcel of PP2041.

e. Judiciary and the Rule of Law

A well-functioning judiciary is an important asset, which developing countries would do well to build up. Even less-than-perfect judicial systems that are cumbersome and costly can help sustain credibility. What matters is not so much that judicial decision-making be fast but that it is fair and predictable.

There is an eternal search for independent, separate, effective, efficient, just, impartial, corruption-free, apolitical and victim-friendly judiciary all over the world Bangladesh included. Democracy thrives on the independence of the three organs of the state namely, the executive, the legislative and the judiciary but preserving the independence (personal, substantive, internal and collective) of the judiciary is a challenge even in developed countries. Personal independence is freedom from influence including government; substantive independence is decisional freedom; internal freedom means independence from superiors and colleagues; and collective independence means institutional independence. In other words, the judiciary has to be an independent institution. The Constitution of Bangladesh provides for the independence of the judiciary under Articles 7, 35(3) and 116A of Part VI that deals with the judiciary. The separation of judiciary is enshrined in Articles 22, 95 (1), 107, 113, 115 and 116. The challenge is to have it function independently, honestly, effectively in favour of the aggrieved. Specific challenges are case overload, quality of people, poor incentive, litigating public, poor legal education and capacity.

A properly functioning judiciary will give investors (both from home and abroad) the confidence which they need in order to undertake and expand their investments in Bangladesh – confidence that their investments are safe from any illegal action from another party and that if any such attempts are made, the courts will give a fair verdict within a reasonable amount of time. Equally important is the enforcement of the court's orders and other laws made by the legislature. Since this is the role which will have to be carried out by the law enforcing agencies, it is essential that they play a facilitative role towards the people, especially the business community.

f. Political Institutions

Political institutions are pillars of pluralistic democracy and representative government. Political institutions are critical to ensure political stability while also providing an enabling environment for rapid growth and poverty reduction. Representative governments and fair and balanced representation bring maturity to political institutions. The political parties and their leadership are in principle guardians of democracy and protectors of democratic values. All political parties should adhere to the concept of pluralistic democracy in the conduct of their affairs just as in the nation.

The challenge for PP2041 is to improve the quality of politics and political institutions. Political institutions should provide security of life and human dignity. Under normal institutional practices, all legitimate political parties should be allowed to participate in the democratic electoral process equally without fear or favour. The real challenge is to strengthen political institutions to steer the country along a stable and inclusive development path in a sustainable way. The related challenge is to prod political parties to adhere to the principles of pluralistic democracy.

g. Social Institutions

In Bangladesh, the NGOs/CSOs collective is the third state in Bangladesh behind politicians and the bureaucracy. The NGOs/CSOs entities have practically stepped in to fill at least part of the gap in the delivery of functions by the state. Available evidence suggests that although the civil society movement in Bangladesh has had an impact on development at the micro-level, its impact at the macro level was modest. Some institutional and policy issues will influence the direction civil society takes in the future. There is a case for a unified legal framework but one must be careful not to stifle innovation, creativity and experimentation.

Bangladesh has done well by not putting a cap on the size and diversity of CSOs. These organizations have moved along the path of corporatization. For social institutions, the target for 2041 is that "all CSOs will be mature high-quality broad-based operations with some as international best practices and all will be institutionalized under normal regulatory and business practices" while milestones are given by gradual improvements.

h. Gender Equality

Highest political leadership has been vested in women in Bangladesh. Bangladesh has made immense gain in female education, infant mortality, maternal mortality, fertility and access to credit but these have not translated into gains in terms of property rights, inheritance, entry to business, access to financial services, government service, parliament, local government, access to public space, law enforcement, legal profession, sports, violence against women, reproductive autonomy, fertility preferences, divorce, parental authority, gender-sensitive budget and the like. It is government policy to maintain and enhance the pace of change in this area through gender empowerment. It is expected that Bangladesh would substantially reduce gender discrimination by this perspective plan period.

i. Global Institutions – WTO

A particularly important institution that influences the domestic and international practice of trade is the World Trade Organization (WTO). The essence of the WTO is an agreement to subject international trade to a set of multilaterally agreed rules. But they are based on two closely related basic principles: reciprocity, meaning that countries' reductions in tariffs are expected to be met by equivalent reductions in tariffs by other countries, and nondiscrimination, meaning that countries must offer the same tariffs to all members. There are two important functions that the WTO as an institution provides. The first function is helping countries commit to trade policy reforms that they might otherwise be tempted to reverse. The second function that the WTO serves is to help create constituencies that provide political support for tariff reductions and opening up of economies for trade. In addition, the WTO has been working to increase the engagement of LDCs in world trade. Bangladesh, being an LDC, has also been a beneficiary of certain preferential access in world trade. Bangladesh has very effectively utilized the medium of preferential access to achieve significant export success. This trend will have to be continued over the next two decades or more but trade and economic policies will need to be re-oriented to meet stiffer challenges of global competition once Bangladesh graduates out of LDC status beyond 2024.

2.4 The Challenge of Reforming Institutions

Reform-minded governments should seize opportunities to build consensus, address the obstacles to change, and initiate and sustain reforms to build an effective public sector. The resulting reinvigoration of public institutions will generate large payoffs. Good governance is the launchpad for longer-term perspective development of Bangladesh. Democratization is a process which can be slow, flawed, hybrid, full and pluralistic. Bangladesh will strive for pluralistic democracy. Decentralization of power is paramount to pluralistic democracy and good governance. Bangladesh cannot go forward and be a developed country by 2041 unless administrative, financial (including revenue) and political power is decentralized to the grassroots level, more formally to the lowest hierarchical level of government structure.

Capacity building for institutions compatible with a transforming economy is important for pluralistic democracy, decentralization of power and good governance. The critical elements are: the right type of institutions for the right task, strengthening of institutions to function effectively in delivering assigned tasks, developing the capacity to manage institutional transition during socio-economic transformation and finally, making sure that institutions remain dynamic not trapped in mediocrity and conformity. True growth will be sustainable if institutions are strong since goals are achieved easier.

2.5 The State of Economic Governance in Bangladesh

Bangladesh's macroeconomic management has usually focused on the following goals which are quite similar to what was laid out in what is known as the Maastricht Criteria: (i) low and stable inflation (Bangladesh's monetary policy inflation target has been above global average but consistent with the country's economic parameters especially growth); (ii) low long term interest rates (higher than global average but consistent with inflation target); (iii) low national debt relative to GDP (public debt to GDP ratio at 34% in 2019 is in line with comparator countries); (iv) low deficits (the budget deficit as % of GDP at 5% in 2019 is well within acceptable limit) and (v) currency stability (under managed float, the Bangladeshi Taka has been relatively stable for some time since Taka was floated in 2003). So, budgeting and planning in the medium term are in good shape, macroeconomic management is the envy of neighbours but short-term problems may cloud the medium and the longer-term.

a. Medium-Term Economic Planning

Bangladesh compares favourably with comparator countries in terms of planning framework and link with budget but lags in synchronization with budget and results achievement, in which Korea is an outstanding example. Evidently, Bangladesh has some way to go in planning and learn from leading Asian countries like the Republic of Korea. When compared with other Asian countries like China, India, Indonesia, Philippines, Vietnam, Thailand, South Korea and Malaysia, the PPB2041 and Five-Year Plans of Bangladesh have a strong link with the country's budget. However, the results are weak to despite that strong link. The reasons for Bangladesh's relatively weaker performance in this regard are the lack of implementation capacity of projects and programs.

In the short to medium-term up to 2031, two five-year plans would be the constituent parts of PP2041 with targets to achieve the goal of reaching UMIC by 2031. In the longer-term beyond 2031, the Planning Commission should consider focusing exclusively on vision, strategies and policies of both perspective and respective five-year plans.

b. Long-Term Economic Planning

The Perspective Plan of 2021 placed a strong emphasis on establishing a legacy of good governance by focusing on three fundamental principles of governance: (i) ensuring the rule of law; (ii) avoiding political partisanship; and (iii) building a society free from corruption. At the mid-point of the Perspective Plan, the state of governance and economic management in Bangladesh presents a mixed picture, with some progress in modernization of governance institutions, but signalling the need for corrective measures in many other critical institutions that foster development going forward as the economy undergoes transformation first into an Upper Middle Income Country and then into a High Income Country.

The PP2021 included a strategy for improved governance – based on four key pillars: (i) strengthening the civil service; (ii) promoting devolution to local governments; (iii) strengthening Public-Private Partnerships (PPP); and (iv) reforming the processes of planning and budgeting. Attaining the milestones of Vision 2021, as articulated under the Perspective Plan of 2021, critically depends on addressing key governance challenges, namely: (i) deficiencies in the capacity of the public administration; (ii) shortcomings in economic management; and (iii) troubling malfeasance affecting performance across segments of the public administration.

Bangladesh 2041: Perspective Plan Strategies for Institutional Development

The strategic thrust of PP2041 will be on strengthening institutions. Broadly speaking, the major focus should be on (i) planning institutions, (ii) governance institutions, (iii) financial institutions, (iv) democratic institutions - institutions to promote pluralistic democracy, (v) decentralization institutions, and (vi) capacity building institutions. The latter has sub-classification including (a) gender empowerment institutions, (b) legislative institutions, (c) judicial institutions, (d) public administration capacity - Executive, the bureaucracy and the rule of law, (e) political institutions, (f) social institutions, (g) institutions for land management, (h) institutions for human capital development – basic education and skill, (i) institutions for technology, and (j) market institutions.

a. Planning

Short to medium-term up to 2031: Five-year plans will have to be fully synchronized with Government's Medium-Term Budget Framework (MTBF) and the annual budgets so that regular monitoring and course correction could be made as the economy moves towards PP2041 target.

Longer-term beyond 2031: The Planning Commission should consider focusing exclusively on vision, strategies and policies of both perspective and respective five-year plans.

A periodic review and monitoring the progress of the plan will be an essential part of planning process.

b. Governance

Emphasis has to be on strengthening core governance institutions like Comptroller and Auditor General, Public Accounts Committee, Bangladesh Bank, Public Service Commission, Securities and Exchange Commission, courts, local government bodies. Transparency can be increased through the implementation of the Right to Information Act (RTI) 2009 by enhancing institutional capacity

to comply with the Act. In order to attract private investment including foreign private investment required to reach the bold 2041 income target, particular attention has to be paid to financial governance, fiscal governance, land governance, urban governance, corporate governance and the court system to enforce contracts and adjudicate disputes. Going forward towards 2041 land and urban governance is the priority for up to 2031 while the others will have to be continued up to 2041 and beyond. There is no scope for slackening effort.

Short to medium-term up to 2031: Initiating governance reform for improvement of effectiveness through administrative reform as a continuing and gradual process will be based on both objective need and subjective public demand, productivity, transparency and accountability and reduction of corruption and abuse of power and enforcing the rule of law; encouraging female participation and representation in legislative bodies, judiciary and administration and all policy-making bodies; strengthening Anti-Corruption Commission along with expediting the judicial process; and allocating resources for the development and application of e-governance.

Longer-term beyond 2031: Continuation of the strategy of effective government and enforcement of the rule of law with complete transparency and accountability within the framework of pluralistic democracy and further emphasis on e-governance.

c. Democracy and Democratization

The second pillar of Vision 2041 is democratization. Democracy is a very important institution which has to function properly in order for a country to move forward. What Bangladesh needs moving forward is a full pluralistic democracy. Pluralistic democracy implies that it is an "interactive process working through multiple sources of power such as democratic institutions, interest groups and peoples' representatives with the government protecting and promoting diversity". This process involves three parts: (i) economic consensus; (ii) political consensus and (iii) social consensus.

In short, the PP2041 target is pluralistic democracy and policies and strategies are embedded in respect for critical values. This concept of pluralistic democracy is mirrored in a statement of the Supreme Court (SC) in connection with its verdict on the 16th amendment, "It is expected in a country run by constitutional democracy that the following indispensable constituents would exist: (a) purity of election, (b) probity in governance, (c) sanctity of individual dignity, (d) sacrosanctity of rule of law, (e) independence of judiciary, (f) efficiency and acceptability of bureaucracy, (g) credibility of institutions like judiciary, bureaucracy, Election Commission, Parliament, (h) integrity and respectability of those who run those institutions."

Strategies to attain target are (i) strengthening and empowering EC to act independently as in India, (ii) ensuring independence of judiciary and separation of power of Executive, Legislature and Judiciary, (iii) reviewing and strengthening the legal and regulatory framework for election, and (iv) providing constitutional and legal guarantee for avoiding/eliminating possibility of non-democratic extra-constitutional usurpation of power by any force/group including the armed forces.

The challenge is to strengthen political institutions to steer the country along a stable and inclusive development path in a sustainable way.

d. Decentralization

The third pillar of Vision 2041 is decentralization. Decentralization is a very broad concept. There are many components/sectors which can/should be decentralized. The framework for decentralization includes: (i) political decentralization; (ii) judicial decentralization; (iii) administrative decentralization; (iv) electoral decentralization; (v) law and order decentralization and (vi) fiscal and planning decentralization.

Policies and strategies to deal with these challenges will have to be carefully designed and implemented. First capacity building at all levels is to be given top priority. Second, political support will have to be mobilized to neutralize vested interests and introduce structural changes in the unitary character of the government and the centralization of government and administration in Dhaka where major political and administrative decisions are taken. Third, major investments will have to be made to strengthen institutions of decentralized government and administration from the top down to the grassroots. Fourth, develop a legal framework that will provide a clear guideline for the local government machinery about its function, jurisdiction, taxation, finance, budget account, electoral process, and central-local and local-local relationship.

e. Capacity Building

The fourth pillar of Vision 2041 is capacity building. The purpose of building the capacity of institutions is to make them compatible with a transforming economy which is focused on strategic relationship, resource development and internal management and operations. This is a lengthy process but has to be undertaken in order to achieve the transformational changes that are expected over the next 20 years in order to reach the coveted goal of High-Income Country. Four approaches are key to success: (i) empowering/engaging/forming the right types of institutions for the right task; (ii) strengthening institutions to function effectively and deliver services with impact; (iii) developing the capacity to manage institutional transition and (iv) sustaining dynamism within institutions.

Realizing the urgency in order to meet the goals of Vision 2021, in 2010 the Ministry of Public Administration (MoPA) launched a crash program of intensive domestic and foreign training of the civil servants in order to build their capacities so that they can deliver development-oriented outcomes. A massive program of training, domestic and international, is underway. In the five years since 2009, more than 9,000 officers have undergone training. To promote specialization, over 2,000 officers have been deputed to attain Master's Degrees and other short courses from abroad. Links have been established with major universities in the UK and Australia. To support the development of ICT skills in achieving Digital Bangladesh, e-filing system has been launched in MoPA and other ministries with technical assistance from the Korean International Cooperation Agency (KOICA). A review of Annual Reports of MoPA from 2010 through 2015 gives a clear impression that there have been mounting efforts at building capacities of civil servants with the scale of programs and financial allocations in 2015 several multiples of what they were in 2010.

With a benchmark of training less than 1 million workers, milestones and targets for PP2041 are built around the government's Skills for Employment Intensive Program (SEIP) program. The target for PP2041 is to complete training of 14 million workers. Milestones are having trained 6.5 million workers by 2021 and another 9 million by 2031.

f. Skill Development: Upgrading Low Skill-Low Productivity to High Skill-High Productivity of Labour

The challenge of annual addition of 2 million plus labour is difficult to absorb in the absence of appropriate training and skill development; low skill pervades the entire labour force causing low productivity; training and skill development facilities are inadequate and poorly equipped; competency-based training is missing; and skill mix of overseas workers is unfavourable to raising average earnings/remittances to the level of other Asian countries like India, Pakistan and Sri Lanka.

Short to medium-term up to 2031: Articulating a skill development policy and strategy in response to structural changes in the economy and global opportunities abroad; following up the policy and strategy with larger investments in skill development; synchronizing skill development with the exploitation of the demographic dividend on the one hand and growth and structural change based on productivity growth on the other; reorienting skill development towards export-led growth which is critical for Bangladesh to work its way out of the impending middle-income trap and jobless growth; transforming the skill mix and productivity of overseas employment to achieve greater employment openings and higher return in terms of average remittances; developing specific policies and incentives to attract non-resident Bangladeshis to actively engage in skills transfer and investment in Bangladesh; increasing public investments and mobilizing private resources including PPP for the development of ICT and related skills; and making additional investments in female literacy, greater participation of women in skill development programs, increased female labour force participation in formal sector employment and creating greater opportunities for women in business.

Longer-term beyond 2031: Continuation of the above strategy with added emphasis on reducing supply-demand mismatch and unemployment and under-employment at all levels and among all groups; adapting skill composition to changes in technology; ensuring that training and skill development is mostly private sector based as skill development develops and matures as a market-based activity; facilitating selected import of skilled labour to fill gaps; and continuing manpower exports for overseas employment; and making the development of ICT and related skills an integral part of strategies for longer-term skill development.

g. Strategy for Technology Breakthrough

In the field of 21st-century technology, Bangladesh must make a breakthrough by leapfrogging into the other side of the digital divide. Technology has five components: technology platform, advanced universities for science and technology, Centres of Excellence (CoE), IT Parks, IT education in universities, National Institute for Information and Communication Technology and ICT service exports. This is an ambitious program but achievable given that Bangladesh has achieved much under its Digital Bangladesh Program. To make this feasible, the following strategic thrust has to be pursued:

1. Infrastructure support – enabling infrastructure
2. Manpower support – training and skill development to develop talent supply pipeline
3. Budget allocation for upgraded IT education at universities, CoEs and the National Institute for Information and Communication Technology

4. Develop a joint education and skill development program with foreign universities
5. Policy support
6. Establishment of public-private forum involving the Ministry of Science and Technology, other relevant agencies and the private sector
7. Industry-university collaboration
8. Long-term marketing and promotions planning
9. Identity and brand management
10. Periodic review and revision of the incentive structure for the IT/ITeS sector
11. UGC strengthened for ensuring accountability
12. Serious capacity building at the relevant ministry and agencies undertaken
13. Partnership and cooperation arrangements with recognized and reputed foreign businesses, industries, universities, think tanks and research institutions

h. Centres of Excellence

The government will also look to support the Centres of Excellence (CoEs). A Centre of Excellence refers to a team, a shared facility or an entity that provides leadership, best practices, research, support and/or training for a focus area. The CoEs should provide support (by subject matter experts), guidance (with standards and methodologies), shared learning (by training and certification), measurements (of output) and governance (regarding the allocation of resources and coordination). Going one step further, to drive innovation, the Government will consider establishing a Centre of Innovation and Development (CID).

The purpose of the CoEs will be: (i) provision of advanced technology facility for demonstration of productivity benefits to the sector; (ii) development and higher-end training of skilled manpower; (iii) providing a platform for research and development for new technology development and technology transfer; (iv) undertaking low-cost automation and other industrial consultancy projects for upgrading of existing industry; (v) supporting incubation of new business as there are good prospects for nurturing entrepreneurship; (vi) providing common service centre for testing, calibration and others as needed; (vii) supporting repair and maintenance of equipment and (viii) demonstrating and creating models of IT implementation in the sector. At present, there are few institutions with the potential to be CoEs'. The target for PP2041 is to "have 30 CoEs operational in sectors of priority" with milestones of 6 by 2021 and 20 by 2031 respectively.

2.6 Going Forward

Studying the role of institutions in development reveals that institutions do have a significant impact on determining the level of development in societies. Differences in the quality and strength of economic institutions also explain differences in income levels in countries. But these differences persist over long periods of time and institutions are difficult to reform. Nevertheless, countries that do make an effort to reform critical institutions are able to move out of stagnation on to rapid development paths. A well-known case is Botswana, a small landlocked country in Africa, which experienced the fastest rate of economic growth in the past 35 years, in Africa as well as globally.

Though endowed with large reserves of diamonds – a feature that is often a curse for societies – it compares with developed countries in indices of governance and political institutions. Botswana, according to analysts, had reached a state of political equilibrium that facilitated good economic institutions.

To reach the high-income goal in PP2041, Bangladesh stands to gain by drawing on the findings of institutional experts about the main determinants of cross-country differences in income per capita - differences in economic institutions. Such differences in institutions persist over long periods of time and are the outcome of different collective choices – political equilibria. A combination of good governance and good economic institutions is the outcome of good political equilibria. Thus, understanding underdevelopment implies understanding why different countries get stuck in political equilibria that result in bad economic institutions. Solving the problem of development entails understanding what institutional capacities to harness in order to move a society from a bad to a good political equilibrium. Evidence from around the world reveals that promoting democracy and accountability with appropriate checks and balances will almost certainly lead to better economic and political outcomes. The institutional approach to development thus gives us an understanding of the determinants of positive political equilibria, presenting the scope for designing interventions that can bring rapid prosperity to a developing nation like Bangladesh.

CHAPTER 3

MACROECONOMIC FRAMEWORK FOR ACCELERATED INCLUSIVE GROWTH TOWARDS A HIGH-INCOME ECONOMY

MACROECONOMIC FRAMEWORK FOR ACCELERATED INCLUSIVE GROWTH TOWARDS A HIGH-INCOME ECONOMY

3.1 Achieving High Growth with Macroeconomic Stability

Having crossed the threshold of a lower-middle-income country, and having met all the criteria to graduate out of LDC status by 2024, Bangladesh now aspires to move up to the Upper Middle-income country status, by 2031, and to become a High-income country by 2041. The past development record, and future prospects and potential, together indicate that this journey is possible. Yet Bangladesh faces many development challenges that are well summarized in the 7th Plan, the Perspective Plan 2021, as well as in the Bangladesh Delta Plan (BDP2100). Many of the environment-related risks and vulnerabilities which were not explicitly incorporated in the 7th Plan or PP2021 have been included in the preparation of BDP 2100. As the Perspective Plan 2021 draws to a close, the Government has decided to prepare a long-term Perspective Plan (PP) covering the period 2021-2041.

Like any other plan, the approach is to strategize on the prospects and potentials of inclusive and sustainable growth over the twenty-year period considering Bangladesh's recent economic and social performance, growth outlook over the medium- and long-term, and the experience of global best performers in recent decades. PP2041 also takes on board the Vision 2041 goals and targets already announced by the government and outlines development scenarios that allow for interactions between national and international developments.

Global context: PP2041 comes at a time when Bangladesh is experiencing a growth surge spurred by strong national policies of inclusive growth. And it is not alone. Other emerging and developing economies have also experienced a growth surge since the start of the new millennium. The new factor is the growing weight of emerging market and developing economies in the global economy with a consequent decline in the weight and influence of advanced economies. But there are also mounting uncertainties in the global economic landscape. After 70 years of unparalleled peace and prosperity ensured by a post-war multilateral system, that framework is under threat in light of an evolving trade war spurred by US-China tit-for-tat tariffs, as well as ultra-right political trends in many advanced countries which is likely to leave significant impacts on global economies going forward. Yet the fact remains that economic interdependence is greater than ever – through trade, finance, knowledge spillovers, migration, and environmental impacts, among others. In the decades to come, Bangladesh will have to seek greater economic integration with the global economy through trade and investment in order to create jobs and eliminate poverty completely on its march to become a developed country.

National context: In fiscal year 2016, Bangladesh economy crossed the threshold of 7% annual GDP growth and has maintained over 7% growth rate ever since. This growth acceleration comes after a decade of 6% average annual growth performance. And the unique feature associated with this growth has been its relative stability compared to other developing economies. This exemplary growth performance is the consequence of a decade of prudent macroeconomic management which yielded moderate yet sustainable external and internal balances for the macroeconomy, resulting in

low indebtedness (domestic and external) for the overall economy. Thus, strong macroeconomic foundations have been laid to reap the benefits of higher growth towards reaching the thresholds of a high-income country.

3.2 Strategic Goals and Milestones of the PP2041

The following strategic goals will be pursued as the essential components of economic policy over the long-term:

- Eradication of Extreme Poverty by 2031; reducing Poverty to less than 3 percent by 2041
- Upper-middle-income country by 2031; High-income country by 2041
- Industrialization with export-oriented manufacturing will drive structural transformation into the future
- Paradigm shifts in Agriculture will enhance productivity and ensure nutrition and food security for the future
- A Service sector of the future will provide the bridge for the transformation of the rural agrarian economy to a primarily industrial and digital economy
- The Urban transition will be an essential part of the strategy to move to a high-income economy
- Efficient Energy and Infrastructure will be essential components of the enabling environment that facilitates rapid, efficient and sustainable growth
- Building a Bangladesh resilient to climate change and other environmental challenges
- Establishing Bangladesh as a knowledge hub country for promoting a skill-based society

3.3 Macroeconomic Framework for High and Stable Growth

The overarching goal of the PP2041 is to attain the status of High -Income Country (HIC) by FY2041. That would require the country to have crossed the upper-middle-income threshold by 2031, at a per capita income of about USD 5,500, at 2017 USD, and to cross the high-income threshold by 2041, at an estimated GNI per capita of over USD 16,000 (in current dollar prices). This will require high and sustained growth for a long period. Strong macroeconomic foundations with sustained macroeconomic stability (internal and external) will be the bulwark of such high long-run growth under the Perspective Plan. The technical macroeconomic framework designed to achieve growth and related dimensions of the macroeconomy shows that the economy needs to clock average GDP growth at a consistently high rate of 9% during the next two decades, 2021-2041. Needless to mention, the Vision 2041 requires that this growth will have to be equitable and inclusive.

Table 3.1: Key Macroeconomic Indicators for PP2041[1]

	Benchmark FY20 (% of GDP)	Target FY31	Target FY41
Real GDP Growth (%)	8.19	9.0	9.9
CPI inflation (%)	5.5	4.7	4.5
(as % of GDP)			
Gross Investment (%)	32.76	41.15	46.9
Gross National Savings (%)	31.31	37.18	43.95
Total government revenue (%)	10.47	19.55	24.15
Total government expenditure (%)	15.52	24.55	29.15
(growth rate)			
Exports	5.00	11.65	11.00
Imports	5.00	12.05	10.00
Remittances	9.00	4.50	2.00
Poverty (headcount, %)			
Extreme Poverty (%)	9.38	2.25	0.68
Poverty (%)	18.82	7.02	2.59

Source: GED projections

In developing countries like Bangladesh, it is through capital deepening that most of the real economic growth is realized. The experience of China, emerging economies in East Asia, and India, all point to the deepening of capital through higher investment in relation to GDP. All these high performing economies have demonstrated two stylized facts: first, they all experienced higher incremental capital output ratios (ICOR) in the initial years; and second, higher growth rates have been associated with higher investment/GDP ratio. Thus, higher growth in the Perspective Plan is also predicated upon a substantial increase in the investment rate in the economy from the benchmark level of 33% of GDP in FY20, to 41% in FY31, reaching 46.9% in FY41, averaging 41% of GDP during the Plan period. In the first decade of PP2041, the sources of high growth will largely be labour force growth and capital accumulation, with modest improvements in total factor productivity. In the second decade, however, growth acceleration will be fueled by innovation-led productivity growth supported with adequate levels of investment and higher-skilled labour force. The new initiatives proposed in the areas of education, ICT, R&D and science and technology will be key to this outcome.

Much of the investment in the economy could be financed through national savings and multilateral finances, although foreign direct investment is expected to play an incrementally larger role in private investment over time, contributing at least 3% of GDP. Increased levels of FDI would also be desirable from the point of view of improved management, new technology, and greater market access for Bangladeshi exports. There will be massive increases in infrastructure investment which cannot be met entirely from domestic resources, so the government will have to reach out for various multilateral or bilateral sources besides inviting public-private partnerships, both local and foreign. The ICOR is expected to rise initially due to longer gestation periods of infrastructure investment. Subsequently, ICOR will show a declining trend as increased competitiveness and productivity engendered through the expected improvements in infrastructure, greater economic openness, and implementation of the ICT strategy (Digital Bangladesh Initiative) take hold.

1 The analytical framework for the PP2041 consists of four linked models: (i) a macroeconomic model; (ii) an employment satellite module; (iii) a poverty module; and (iv) an environment module. Data sets for the framework have been obtained from several sources including BBS, MoF, etc. Quantitative estimates of their implications for GDP growth, employment and poverty reduction emerged out of this dynamic framework.

Along with pursuing a high growth strategy, 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 agent in raising economic growth, and public investment will be restructured to become more effective in promoting growth and development. Although the national savings rate has improved thanks to the inflow of remittances, 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; and ensuring greater financial inclusion through mobile and digital technology.

Above all, high growth will have to be inclusive and pro-poor so that its benefits reach all sections of the population. The continued thrust on employment generation, promotion of human resource development, and a wider network of safety nets for the poor, elderly and disabled population will address this objective.

3.4 Approach to Fiscal Operations

A key factor in Bangladesh's prudent macroeconomic management has been the maintenance of sustainable fiscal deficits for nearly three decades. The strategy has been to keep public expenditures within the bounds of available revenue envelope plus external resources. Consequently, though Bangladesh has one of the lowest tax-GDP ratios in the world, fiscal deficits have been contained to within 5% of GDP resulting in only a modest buildup of public debt over time.

The growth effects of fiscal operations will depend much on the effectiveness of the revenue mobilization effort. To finance the growing demands for public investment in infrastructure and other public services, revenue mobilization will adopt a strategy of expanding the tax base, and making the strategic shift from heavy reliance on trade taxes to focusing on direct taxes (income and corporates) and value added tax (VAT). Currently, the bulk of the revenue is generated by indirect tax system, mostly value added tax, at domestic and import stages, and the contribution of direct taxes to revenue is about 30 per cent. Low revenue productivity aside, tax evasion remains high. The target is to raise the contribution of direct taxes to the total tax revenue to over 50 per cent by 2041. 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;
- Modernization of the VAT and income tax administration, including computerization of tax administration with much greater reliance on accounts-based audit;
- Strengthen the professional and technical capacity of the revenue administration (using digital technology and online filing) to monitor potential taxpayers, countering tax evasion, and making available strengthened and effective services to taxpayers to raise tax compliance;
- Deepen organizational and other reforms of revenue collecting organizations to transform into state-of-the-art quality institutions to meet the revenue needs (e.g. by introducing non-intrusive inspection, electronic fiscal devices, bond management automation), service requirement of taxpayers, and facilitation of productive activities, consistent with a high-income economy.

The approach to fiscal operations during the PP2041 will be to make the annual budgets an effective instrument of economic management. The thrust will be to make public expenditure more pro-poor, gender-sensitive, and environment-friendly; to improve the quality and effectiveness of public spending; and to establish accountability and transparency of public expenditure. The pro-poor bias of public expenditure will be one dominant theme in the allocation of public resources due to large spending envisaged on social sectors including education, health, and social safety nets. Thus, the growth of public expenditure over the two decades of PP2041 will seek, on the one hand, to shore up public investment in infrastructure to augment long-term growth and, on the other hand, make growth inclusive and eco-friendly.

3.5 Monetary Management for Inflation Control and Stable Growth

In the development context of Bangladesh, effective coordination between fiscal and monetary policies is essential for sustained and stable growth with moderate inflation. Bangladesh has generally succeeded in maintaining reasonable price stability albeit with moderate inflation which seems to be an inseparable companion to growth augmentation in developing countries. Monetary management will play a central role in ensuring macroeconomic stability and allocating adequate levels of credit for private sector economic activity/expansion. The key objective of monetary policy during the Plan period will be to allow monetary aggregates to expand in a manner consistent with the growth and inflation targets envisaged under the Plan.

To fuel high growth, it would be important to ensure adequate levels of domestic credit for the private sector over the Plan period, but within the aggregate limits of the targeted broad money expansion, which in turn will require containing credit to the government (net) and other public entities within reasonable limits. The fiscal deficit targets under the Plan, while sustainable will, however, require sizable new borrowing from the banking system and the public. If needed, the Government may have to seek additional external financing to avoid any crowding out of the private sector. Over the next two decades, as Bangladesh graduates out of the LDC status, the share of concessional multilateral loans will start dwindling and non-concessional loans will start appearing larger in Bangladesh's outstanding loan portfolio. As the private sector also takes on external debt from the capital markets abroad, the overall debt burden and cost of servicing debt are expected to rise. However, with the economy's growth rate reaching greater heights, it will be able to sustain moderately higher debt with somewhat higher interest cost than was the case during the PP2021. Nevertheless, it will be sound government policy to keep a close watch on the evolution of debt in order to take precautionary steps if any mismatch appears between debt burden and debt servicing capabilities of the economy.

In addition to the existing policies to attract 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. Moreover, crop insurance for commercial agriculture and partial guarantee scheme for SME will be initiated such that MSMEs can raise money from the market.

3.6 Balance of Payments Development

Bangladesh's bedrock macroeconomic stability is underpinned by its strong external balance of payments position. It has recorded external current account surpluses in most years since 2001

and that is also reflected in a rapid buildup of foreign exchange reserves of Bangladesh Bank. The strength of the BOP was underpinned by buoyant export and remittance receipts over this period, despite some exogenous factors and externally induced volatility. PP2041 projects robust export growth on the back of export-oriented manufacturing expansion. Exports could reach USD 50 billion in FY21, USD 150 billion by 2031, and USD 300 billion by FY41, growing at double digits for most of this period (Table 3.2).

Table 3.2: Balance of Payments Development

BOP indicators	Annual growth rate (%)		
	FY20	FY31	FY41
Export growth	5.00	11.65	11.00
Import growth	5.00	12.05	10.00
Service growth	9.00	14.0	14.0
Income receipt growth	8.00	10.0	10.0
Remittance growth	9.00	4.50	2.00
Current Account Balance (as % of GDP)	-1.45	-3.97	-2.92
FDI as (%) of GDP	1.00	3.0	3.0
Net MLT as % of GDP	1.25	1.25	1.05
Reserves in months of imports	6.60	6.00	6.73

Source: GED projections

RMG exports will continue to lead the way for much of the Plan period, through new and diversified export products are likely to emerge as export diversification strategy begins to take hold. Home textiles, Jute and jute goods, footwear and leather goods exports are likely to emerge as the next one to watch, followed by agro-processing, light engineering and electronic goods, to name a few. Rather than pick winners, the approach should be to eliminate any policy bias against export production. The export strategy of the future must take a two-pronged approach: (a) put in place a policy regime that accords the same facilities (duty-free imported inputs) to all non-RMG exports as are provided to RMG, and (b) the tariff and protection regime – which is exceedingly tilted in favour of import substitute production - will have to be rationalized to eliminate the policy bias against exports.

Import payments are projected to rise in line with the growth in real GDP and the envisaged export growth. The massive increase in investment expected over the next two decades - supported by FDI and public sector infrastructure investment - would certainly tend to increase import payments. The projected high real import growth will address critical capacity constraints in the power and transport sectors, along with capital machinery and industrial raw materials destined for industrial sector expansion.

Although exports and imports are projected to grow at similar rates on average, because of the higher base for imports (relative to exports) in dollar terms, the external trade balance will continue to widen in dollar terms over the Plan period. However, the trade balance will have to be kept sustainable in the range of 5-6% of GDP. Assuming that the projected growth of remittances (declining rate of growth) does materialize, the current account balance could be maintained at a moderately positive level for much of the Plan period. That presents an optimistic scenario of overall BOP surplus and the consequent accumulation of reserves. A substantial inflow of FDI is expected to be attracted to the

dynamic export sectors, including RMG and other emerging diversified exports, supplementing the inflow of multilateral/bilateral financing, generating surpluses in the Financial Account of the BOP. In this scenario, barring any major setback in external developments, by the close of the Plan period, Bangladesh Bank should have accumulated foreign exchange reserves to cover 14 months of imports.

3.7 Exchange Rate Management for External Stability

Prudent management of exchange rate and ensuring exchange rate stability are critical for BOP sustainability and macroeconomic stability. Bangladesh Bank has been following a flexible market-based exchange rate policy since the adoption of the floating exchange rate regime in 2003. This policy has generally served the economy very well by allowing the rate to be determined in the interbank foreign exchange market with occasional interventions from Bangladesh Bank to minimize the exchange market volatility, i.e., managed float regime. This policy has enabled Bangladesh Bank to ensure stability in the exchange rate, primarily against the US dollar, while at the same time enabling it to build up foreign exchange reserves to a very comfortable level of USD 33 billion by end June 2019. Another key objective is to maintain export competitiveness by preventing any appreciation of the real effective exchange rate.

The policy of exchange rate flexibility with limited interventions to ensure market stability will be continued over the next decades. While maintaining the exchange market stability, the rate will be allowed to be determined by economic fundamentals and taking into account the objective of maintaining comfortable reserve levels and export competitiveness throughout the period. Given the balance of payments outlook, characterized by moderate external current account deficits/surpluses and surpluses in the overall balance, there should not be any major instability in the exchange market. The strategy will be to maintain or augment the current comfortable reserve position of Bangladesh Bank which should help fending off any speculative pressure in the exchange market. The comfortable external position will also allow Bangladesh Bank to consider easing some of the current and capital accounts restrictions in a phased manner. Such a phased liberalization of the capital account, in a stable macroeconomic and strong external environment, would help boost investor confidence in the economy and promote inflow of FDI.

3.8 Savings Mobilization for Higher Investment

The sharp rise in investment projected in the PP2041 period will be largely supported by a significant increase in national savings. National savings, comprising domestic savings and inflow of workers' remittances, have been on a rising trend in recent times owing to increased domestic saving but also because of rapid growth in the inflow of remittances. Building on the recent positive performance on the national savings front, the PP2041 aims to increase national savings rate by nearly 11 percentage points, from 35.5% in FY20 to 46.7% of GDP in FY41.

The increase in national savings projected under the Plan will depend on the continued growth in remittances, albeit at a slower pace, as discussed in the balance of payments section above. Improved investment climate and more attractive rates of return on domestic investment, in part augmented by increased demand for investment, would also encourage the transfer of savings held by expatriate Bangladeshi workers abroad. A part of the increased national savings would also come from the public sector through increased revenue mobilization efforts.

3.9 Investment to Boost Productivity and Growth

Productivity

Growth accounting reveals a minimum contribution (about 0.3 per cent per annum) from technological change to productivity growth in Bangladesh. This will have to increase and become a major potential growth source for Bangladesh, in the long-term.

The growth strategy in PP2041 targets total factor productivity enhancement to contribute about 40 per cent to Bangladesh's economic growth in 2031, and over 50% by 2041. That is a highly ambitious target but one that is pivotal to approach the high growth trajectory that is needed to put Bangladesh on the High-Income Country map by 2041. The strategies for productivity enhancement include investment in Quality Education, Information Communications Technology, Scientific advancement, Research and Development. Innovations in production techniques and processes (e.g. Industry 4.0) will be promoted and supported. Furthermore, a joint public and private sector collaboration will be encouraged.

Public Investment

High growth trajectory in PP2041 presupposes substantial rise in aggregate investment, both public and private. Aggregate investment has stagnated around 30-32% of GDP in recent years when the required rate should have been in the 34-35% range. Of late, public investment has picked up pace, thanks to the launch and implementation of several mega projects in infrastructure. These projects will bridge the widening gap in infrastructure needs that are choking the economy's growth potential. Once these projects come to fruition, they are expected to provide a major push to broad-based economic activities and higher growth. In addition to relying on ADP resources, the Government will go for Public-Private Partnership arrangements in delivering large infrastructure projects.

Private Investment

The Government is fully committed to letting the private sector to be the growth driver. As such, much of the additional increase in the growth of investment is projected to come from the private sector – domestic and foreign. The growing share of private sector investment during the last two decades reflects favourable private sector response to the improved investment climate. The massive public investment in infrastructure undertaken during the past ten years will crowd in private investment and give it the boost that was missing for some time.

Key areas of supporting infrastructure and appropriate political and structural reforms that will drive private investment in the future include: (i) adequate energy supply including electricity and gas (or LNG); (ii) infrastructure including roads, railways, bridges, embankments and dykes; (iii) telecommunications; (iv) ports; (v) legal and administrative systems including property rights issues; (vi) socioeconomic environment including law and order situation; and (vii) sound monetary policy and sustainable management of public finances.

3.10 Avoiding the Middle-Income Trap

Finally, for all the optimism that past success in growth acceleration might create, policymakers will have to be conscious of the possibility of the economy being clogged under a middle-income trap

(MIT) on way to reaching high-income level. For a rapidly growing developing economy, middle-income is no destiny but could be an obstacle to be overcome. For the period 2021-2041, Bangladesh's average GDP growth has been projected at 9-10 per cent per annum, averaging at around 9 per cent. Any let-up in this rapid pace could be the onset of an MIT, delaying the attainment of HIC status. A middle-income trap would occur if Bangladesh were unable to compete with low-wage competitors in standardized manufactured exports because of policy or competitiveness failures or with advanced economies growing on the basis of innovations and modern technology. Asian economies like South Korea, Taiwan, and Singapore, who have made the transition to advanced economies, did not get bogged down at the middle-income level. Malaysia is about to cross the HIC threshold of USD 12055 in 2018, or shortly thereafter[2], while Thailand has been stuck at the UMIC level for many years (USD 6375 in 2018), with growth deceleration well short of the HIC threshold. The strength of Malaysian institutions and stable political system have delivered better governance for better economic outcomes. Thailand economy, on the other hand, lost its shine as export performance decelerated while institutions of economic governance weakened under the weight of political instability. According to World Bank estimates, only 13 of 101 middle-income economies in 1960 had become high-income economies by 2008. This is an increasingly relevant phenomenon not to be taken lightly.

Every country has a different set of economic, social, cultural, demographic and political circumstances; so, there is no unique policy mix to avoid the middle-income trap. Key to avoiding the trap is for each country to find the right mix of demand and supply-side policies to sustain a further boost in their per capita incomes and to achieve growth sourced from domestic and overseas markets. The PP2041 lays down the groundwork and roadmap for sustained high growth towards reaching the goal of HIC status with effective interventions to avoid the middle-income trap.

2 IMF 2018 report confirms that Malaysia is on track to reach HIC status on the back of strong economic growth fueled by exports of electronics and other manufactures and improved terms of trade due to rise in petroleum prices.

Annex A: Macroeconomic Outlook

Macro Projections for Perspective Plan (FY21-FY41)

Fiscal Year	FY20	FY21	FY22	FY23	FY24	FY25	FY30	FY31	FY35	FY41	Avg (21-41)
Real Sector Indicators:	**(As % of GDP or Otherwise indicated)**										
Real GDP growth	8.19	8.23	8.29	8.32	8.37	8.51	8.91	9.00	9.36	9.90	9.02
Inflation (CPI Base, % Change)	5.50	5.40	5.30	5.12	4.94	4.76	4.51	4.46	4.26	3.96	4.52
ICOR	4.00	4.08	4.16	4.24	4.32	4.40	4.56	4.57	4.64	4.73	4.52
Population Growth	1.39	1.34	1.24	1.22	1.19	1.18	1.04	1.03	0.93	0.78	1.03
	(As % of GDP or Otherwise indicated)										
Gross National Savings	31.31	31.56	32.35	32.98	33.68	34.77	36.84	37.18	40.02	43.95	37.75
Gross Investment	32.76	33.58	34.49	35.28	36.16	37.44	40.60	41.15	43.41	46.88	40.87
Public Investment (Including PPP)	8.19	8.38	8.59	8.68	8.86	9.24	9.64	9.72	10.04	10.52	9.64
Private Investment (Including PPP)	24.57	25.20	25.90	26.60	27.30	28.20	30.96	31.43	33.37	36.36	31.23
Foreign Direct Investment (FDI)	1.00	1.70	1.90	2.10	2.50	3.00	3.00	3.00	3.00	3.00	2.82
Domestic Investment	23.57	23.50	24.00	24.50	24.80	25.20	27.96	28.43	30.37	33.36	28.41
Consumption	74.48	73.98	73.48	72.98	72.48	71.98	69.48	68.98	66.98	63.98	68.98
GNI Per Capita USD	2054	2250	2468	2708	2974	3271	5338	5906	8947	17229	7252
Population in million	169.8	172.1	174.2	176.3	178.4	180.5	190.6	192.6	200.1	210.3	
Fiscal Indicators:	**(As % of GDP or Otherwise indicated)**										
Revenue and Grants	10.52	11.24	11.64	12.04	12.89	14.09	19.06	19.55	21.35	24.15	18.51
Total Revenue	10.47	11.19	11.60	12.00	12.86	14.06	19.06	19.55	21.35	24.15	18.50
Tax Revenue	9.37	10.04	10.30	10.60	11.26	12.26	16.96	17.35	19.15	21.85	16.47
NBR Tax Revenue	9.05	9.69	9.90	10.10	10.66	11.56	16.01	16.35	17.75	19.85	15.36
Non-NBR Tax Revenue	0.32	0.35	0.40	0.50	0.60	0.70	0.95	1.00	1.40	2.00	1.11
Non-Tax Revenue	1.10	1.15	1.30	1.40	1.60	1.80	2.10	2.20	2.20	2.30	2.02
Grants	0.05	0.05	0.04	0.04	0.03	0.03	0.00	0.00	0.00	0.00	0.01
Total Expenditure	15.52	16.24	16.64	17.04	17.89	19.09	24.06	24.55	26.35	29.15	23.51
Non-Development Expenditure	9.46	9.96	10.09	10.40	11.09	11.91	16.54	16.96	18.49	20.87	16.00
Development Expenditure	6.03	6.20	6.41	6.49	6.66	7.03	7.37	7.44	7.72	8.13	7.36
Overall Balance (Incl. grants)	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00	-5.00
Financing	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Net External Financing	1.25	1.27	1.29	1.31	1.33	1.35	1.27	1.25	1.17	1.05	1.23
Domestic Financing	3.75	3.73	3.71	3.69	3.67	3.65	3.73	3.75	3.83	3.95	3.77
Debt Indicators	**(As % of GDP or Otherwise indicated)**										
Total Debt outstanding	34.29	35.06	35.75	36.39	37.00	37.55	39.36	39.57	40.07	40.19	38.85
External Debt	11.79	11.61	11.47	11.38	11.34	11.33	11.07	10.98	10.48	9.56	10.79
Domestic Debt	22.50	23.46	24.28	25.01	25.66	26.23	28.28	28.59	29.59	30.63	28.06
Total Debt Services	2.57	2.63	2.68	2.72	2.76	2.79	2.91	3.00	3.17	3.28	2.99
External	0.70	0.71	0.71	0.72	0.73	0.74	0.79	0.85	0.95	0.98	0.85
Domestic	1.87	1.92	1.97	2.00	2.03	2.05	2.12	2.14	2.22	2.30	2.14
External Debt as% export& remittance	66.01	65.75	65.82	66.23	66.95	67.96	71.78	72.19	72.93	76.39	71.35
External Debt Services as% export& remittance	3.94	4.00	4.08	4.19	4.32	4.46	5.14	5.61	6.60	7.83	5.73
External Indicators:	**(Percentage Change (%) or Otherwise Indicated)**										
Export growth	5.00	10.15	10.30	10.45	10.60	10.75	11.50	11.65	12.05	11.00	11.12
Import growth	5.00	11.00	10.70	10.85	11.00	11.15	11.90	12.05	10.00	10.00	10.70
Remittance growth	9.00	8.40	7.80	7.20	6.60	6.00	4.75	4.50	3.50	2.00	4.67
Current Account Balance as (%) of GDP	-1.45	-2.02	-2.14	-2.29	-2.47	-2.68	-3.76	-3.97	-3.39	-2.92	-3.12
Net MLT as % of GDP	1.25	1.27	1.29	1.31	1.33	1.35	1.27	1.25	1.17	1.05	1.23
Exchange Rate (Tk/USD)	86.97	89.43	91.88	94.23	96.47	98.60	109.17	111.26	119.44	130.96	110.94
Reserves, months of imports of goods and services	6.60	6.49	6.48	6.52	6.71	7.09	6.52	6.00	5.50	6.73	6.34
Monetary Indicators:	**(Percentage Change (%) or Otherwise Indicated)**										
Broad Money	10.30	11.20	12.15	12.88	13.24	13.50	13.82	13.86	14.02	14.25	13.63
Net Foreign Assets	6.91	9.40	11.19	12.47	15.72	19.41	5.99	3.39	13.27	18.07	12.37
Net Domestic Assets	11.28	11.70	12.41	12.99	12.58	11.88	15.95	16.47	14.15	13.51	13.96
Private Sector Credit	10.80	11.70	12.65	13.38	13.74	14.00	14.32	14.36	14.52	14.75	14.13

Source: GED Projections

CHAPTER 4
A COUNTRY WITH ZERO POVERTY

A COUNTRY WITH ZERO POVERTY

4.1 Overview

Bangladesh can feel justifiably proud of its achievements in the fight against poverty. In the early 1970s following independence poverty was rampant with head-count poverty in the range of 80%. In 2019 poverty declined to 20.5% while extreme poverty fell to 10.5% as of BBS's projection. This rapid progress in reducing poverty has emboldened policymakers to aim to secure the dream of Bangabandhu Sheikh Mujibur Rahman to free Bangladesh of the incidence of poverty by 2041. The target of Vision 2041 is to eliminate extreme poverty by 2030 and by 2041 Bangladesh will be a high-income country with absolute poverty approaching extinction. The Vision is that by 2041, all citizens will be guaranteed a minimum quality of life based on employment income for all who seek work and social protection benefits for the vulnerable population who cannot participate in the labour market owing to age and physical disabilities. As in current high-income economies, poverty will become a relative concept. Those considered poor in this situation will have at least enough income to buy the minimum quality of life consumption basket.

4.2 Lessons of Experience with Poverty Reduction

The PP2041 poverty reduction strategy and policies will be informed by lessons of Bangladesh past experience with poverty reduction and relevant good practice international experiences. Bangladesh embarked on a course of steady and sustained progress with poverty reduction since the 1990s. The pace and pattern of poverty reduction since the 1990s are shown in Figures 4.1 and 4.2.

Figure 4.1: Progress with Reduction in Poverty

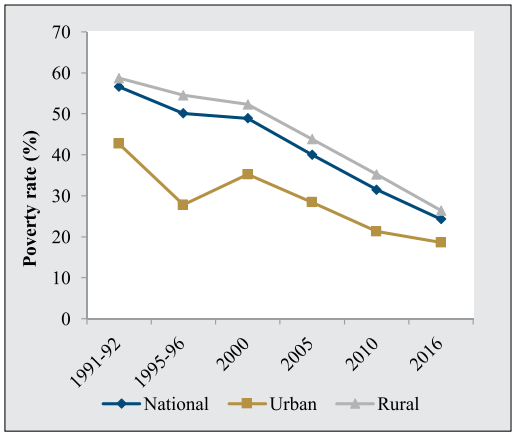
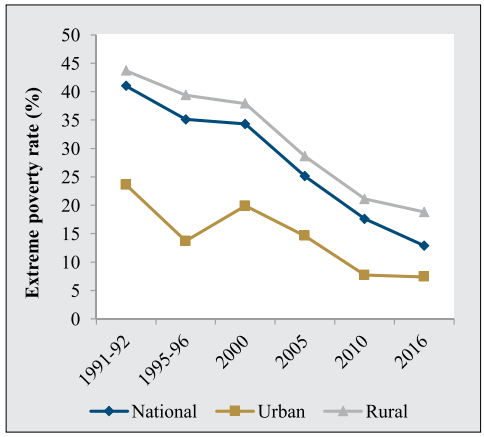


Figure 4.2: Progress with Reduction in Extreme Poverty



Source: BBS HIES, various years.

Clearly, the progress with reduction in both and extreme poverty is impressive. Poverty declined rapidly for population in both rural and urban areas. Extreme poverty fell at a faster pace than poverty, although this progress stalled for the urban poor in 2016. Poverty reduction progress at the Divisional level shows similarly good progress, although the South-Western Regions of Bangladesh continue to exhibit higher poverty than the Eastern Regions (Table 4.1). The reversal of poverty reduction progress for Rajshahi and Rangpur Divisions in 2016 is a matter of concern that will need to be addressed comprehensively under PP2041 Strategy.

Table 4.1: Divisional Incidence of Poverty

Division	2000	2005	2010	2016
West				
Barisal	53.1	52.0	39.4	26.5
Khulna	45.1	45.7	32.1	27.5
Rajshahi (old)	56.7	51.2	35.7	37.5
Rajshahi (new)	n.a.	n.a.	29.8	28.9
Rangpur	n.a.	n.a.	42.3	47.2
East				
Chittagong	45.7	34.0	26.2	18.4
Dhaka	46.7	32.0	30.5	16.0
Sylhet	42.4	33.8	28.1	16.2
All	***48.9***	***40.0***	***31.5***	***24.3***

Source: BBS HIES various years as the latest available

Income Inequality: It is well known that income inequality can adversely affect the fight against poverty. The trend of income inequality as measured by the Gini coefficient is shown in Table 4.2. There is a clear pattern of rising income inequality. These inequalities are partly explained by initial conditions but also by inequalities in access to quantity and quality of health and education services. An interesting result for Bangladesh experience is that while income inequality has widened, consumption inequality is significantly lower and not changed much over the years. This is partly due to family income transfers but also owing to the consumption smoothing effects of microcredits. Importantly, the pattern of rising income inequality and associated underlying inequalities in access to human and physical capital will have to be arrested and reversed in the PP2041 Poverty Reduction Strategy to strengthen the fight against poverty.

Table 4.2: Trend of Income Inequality (Gini coefficient)

Year	National	Rural	Urban
1991-92	**0.388**	**0.364**	**0.398**
1995-96	**0.432**	**0.384**	**0.444**
2000	**0.451**	**0.393**	**0.497**
2005	**0.467**	**0.428**	**0.497**
2010	**0.458**	**0.431**	**0.452**
2016	**0.482**	**0.454**	**0.498**

Source: BBS HIES, Various Years

Lessons of Experience

A detailed review of poverty and inequality trends and factors that explain the results is provided in the background paper done for the PP2041[3]. The main lessons are:

- The acceleration in GDP growth has been the most important factor underlying the rapid reduction in poverty and extreme poverty in Bangladesh. Sustained rapid GDP growth is essential for sustained poverty reduction in the future.
- While the rate of growth is important, the sectoral composition of growth is also important for poverty reduction. GDP growth has to be pro-poor in the sense that it allows the maximum participation of the poor in the growth process. Factors that have been

3 S. R. Osmani "Eradicating Poverty and Minimizing Inequality for Ensuring Shared Prosperity in Bangladesh" Background Paper prepared for PP2041.

particularly beneficial for poverty reduction include improvements in farm productivity and incomes, expansion of rural non-farm employment through inflow of remittances, improvements in rural infrastructure, micro-credit programmes, expansion of low-skilled jobs in manufacturing, especially garment industry, and growth of urban services activities.

- A pro-poor growth on the demand side is necessary but it is also essential that the constraints that reduce the access of the poor to benefit from the growth process are removed or minimized. One such constraint is access to health and education services. Improved human capital is a key determinant of poverty reduction. Stronger efforts are needed to improve the access of the poor to better education and health services. Improved human capital formation will assume a bigger role as Bangladesh transforms towards a higher income economy. In this transformation manufacturing and organized services will assume an increasingly higher role that requires trained and skilled labour force. In order for the poor to participate in this growth environment, their training and skill base will have to be substantially expanded.
- The spread of microcredits played an important role in creating non-farm employment, in improving the asset base of the poor and in smoothing consumption. Continued focus on microcredit will be important for further reducing extreme poverty. At the same time, greater access to institutional credit will support the buildup of human and physical capital for the poor.
- Foreign remittance inflows have supported poverty reduction directly through income transfers to beneficiary families many of whom are poor, and indirectly through the creation of non-farm rural jobs. Evidence shows that many of the districts in the Western part of Bangladesh do not have access to the migrant labour market. Policies that facilitate that access can be useful in reducing poverty.
- Internal in-country migration from rural to urban areas has helped poverty reduction at the national level by opening up higher income opportunities for many migrant workers. But the urban development has not kept pace on the supply side in response to the higher influx of rural population in urban areas. An even more complicated factor is that because of unplanned urbanization, most pressure has been exerted on the capital city of Dhaka and the neighbouring districts of Narayanganj, Gazipur and Narsingdi. Most other urban city centres, especially in the Western Region, have not provided the environment to facilitate economic growth or urban services. As a result, there is now a growing concentration of poor in the urban areas, especially in Dhaka and surrounding districts. This has not only generated unsustainable pressure on urban services such as housing, transport, water supply, sanitation and drainage, but it has also led to a slowdown in the progress with urban poverty reduction as indicated by the results of HIES 2016. The adoption of an organized urban strategy that deconcentrates urban growth into many more urban centres than just Dhaka and surrounding cities is essential for sustained poverty progress as well as rapid growth under PP2041.
- The continued East-West divide whereby the Western Region of Bangladesh exhibits higher poverty than the Eastern Region suggests the need for public policy interventions in infrastructure to improve labour and goods mobility between the districts of the Western Region and the growth centres of Dhaka and Chattogram in the Eastern Region. The Padma

Bridge is one such strategic investment that will help. Additional public investments in infrastructure improvements will be necessary.

- Evidence shows a strong negative role of climate change and natural disasters on poverty. The districts that are most vulnerable to climate change and natural disasters also show a much higher incidence of poverty. Concerted efforts will be needed to address these vulnerabilities at the source.
- Many poor are excluded from social protection programmes whereas many non-poor are enjoying the benefits of these programmes. The National Social Security Strategy (NSSS 2015) recognized these challenges and incorporates new strategies (including a plan to introduce universal pension scheme), programmes and policies that address them and make social protection much more focused on the poor. Speedy implementation of the NSSS is a high priority for PP2041.
- Income inequality is a long-term challenge that has reduced the efficacy of GDP growth in lowering poverty. A concerted effort is needed to address the root causes of inequality and undertake policies that reduce inequality in both the factor markets and the labour market. International experience suggests that better access of the poor to human and physical capital and higher spending on pro-poor social protection spending are key elements to reduce income inequality.

4.3 Poverty and Inequality Targets of PP2041

Fundamentally, the main poverty and inequality objectives of the PP2041are to:

- Eliminate the incidence of extreme poverty by FY2031.
- Keep the incidence of poverty to a bare minimum.
- Arrest the trend of increasing income inequality and seek to reduce it.

The associated poverty reduction and inequality targets are shown in Table 4.3. The most important targets are the elimination of extreme poverty (less than 3%) by FY2031 and the virtual extinction of poverty by keeping the incidence at below 3% by FY2041. PP2041 also sets a modest target for reduction in income inequality as measured by the Palma Ratio.

Table 4.3: Poverty and Income Inequality Reduction Targets of PP2041

Indicators	Base Year (2016)	2021	2025	2031	2041
Projections					
Extreme Poverty	12.9	8.38	5.28	2.55	0.68
Poverty	24.3	17.27	12.17	7.0	2.59
Income Inequality (Palma Ratio) [4]	2.93	2.93	2.80	2.75	2.70

Source: GED Projections

4 The Palma Index is used instead of the traditional Gini coefficient to set income inequality target. The Palma Ratio is simply the share of top 10% of the income distribution divided by the share of the bottom 40%. This is a better measure of income inequality because most income inequality happens owing to the gap between these two tails. See Osmani background paper for further details. This is also the SDG indicator used for assessing progress in reducing income inequality.

4.4 PP2041 Strategy for Poverty Reduction

The poverty reduction strategy, policies and programmes to achieve the targets of Table 4.3 are grounded in the lessons of national and international experiences and outlook for the economy for PP2041. The main strategic elements are summarized as follows:

Securing Sustained Rapid Rate of GDP Growth

Based on the lessons of international experience as well as from Bangladesh's own experience with poverty reduction, the most important element of the PP2041 poverty reduction strategy is to accelerate and sustain a rapid rate of growth. Indicative projections for the PP2041 macroeconomic framework show that Bangladesh needs to grow at an average rate of 9% per year during FY2021-FY2041 to achieve the poverty reduction targets. This should not be a difficult target as Bangladesh is already approaching a rate of GDP growth in the 8% range. As discussed in detail in Chapter 3 on the Macroeconomic Framework for PP2041, further growth acceleration will be based on acceleration in the rate of investment, labour-intensive exports, improved labour productivity and technological change. Higher growth will create the employment and income base to bolster higher consumption and standards to lower poverty. Additionally, higher GDP growth will expand the tax base and enabling resource mobilization to finance critical poverty programmes for poverty reduction.

Making GDP Growth Pro-poor through Structural Transformation of the Production Base

Past experience showed the important role of changing production structure for poverty reduction. The falling share of employment in agriculture and technical progress increased farm productivity that raised real wages in agriculture and supported poverty reduction. Alternative non-farm employment and income opportunities have increased rural incomes and lowered poverty. This structural transformation of the production structure must continue to secure a sustained reduction in poverty. The challenge is to ensure that growth is pro-poor. The macroeconomic framework for PP2041 shows that the GDP and employment shares of agriculture will continue to fall whereas the shares of manufacturing will rise. The GDP share of services may fall but its employment share will grow. This sectoral pattern of production and employment composition is broadly consistent with the poverty reduction targets of PP2041. Yet, the internal consistencies of the employment path with the production path and in turn with the needs of pro-poor growth are not automatic and will require adoption of proper policies.

On the policy front, several challenges will need to be addressed. First, despite its shrinking GDP and employment shares, agriculture will continue to play a major role in poverty alleviation, especially in the interim period between now and FY2031. Investments in rural infrastructure and farm technology must continue. Policies to strengthen farm production diversity through research, extension services, access to institutional credit and export support are essential. In particular, the role of fisheries, livestock, dairy, and fruits, vegetables and flowers can be further expanded.

Second, since most of the output and employment growth will need to come from the manufacturing sector, Bangladesh will need to pursue a strategy of promotion of labour-intensive exports. The success of RMG is an example of this strategy. Other labour-intensive manufacturing exports will need to be promoted by offering an incentive environment similar to that found in RMG. The most important incentive is to eliminate the anti-export bias of trade policy. Further details of the trade and industrialization policy for PP2041 are provided in Chapter 7.

Third, the small manufacturing enterprises provide a lot of employment but they lack dynamism, suffering from low productivity, low investment, low skills and low technology. These constraints will have to be addressed. In particular, addressing the financing constraint through improved access to institutional credit will be critical. Vertical integration of the production chain between large and small firms including multi-national large firms will be an integral part of the industrialization strategy under PP2041.

Fourth, globally the manufacturing sector is getting more technology savvy, automated and capital intensive. So, the choice of technology and capital intensity of production is very important decisions that have a policy role. While productivity concerns will dictate the adoption of modern technology, the choice of capital intensity can be affected by factor pricing policies. In particular, the policy framework must not subsidize the use of capital-intensive technology.

Fifth, the services sector will increasingly become more organized as technology and skills-based employment opportunities are created from the growing manufacturing sector. To enable the poor to participate in this changing market, policy framework must support the growth and modernization of trade, transport and personal services. These three services are mostly informal in nature and provide the large bulk of employment in the services sector, especially to the poor. The most important constraint facing these activities is the lack of access to institutional credit. In the USA the Small Business Authority (SBA) was created to provide one-stop promotional support to all small business enterprises including in manufacturing. This has been a very successful policy intervention and Bangladesh can do the same to promote small enterprises that provide the bulk of the employment in the country.

Strengthening the Human Capital Base of the Poor

This strategic element is sine qua non for sustained poverty reduction under PP2041. While the positive role of human capital already became explicit in the past record of poverty reduction, this will become even more prominent under PP2041. The changing production and employment structure where the bulk of employment will come from manufacturing and organized services will demand labour that is skilled or semi-skilled. Global progress with automation will create additional pressure on demand for skilled labour. In order for the poor to participate in this changing labour market, they must acquire the required skills. This is a long-term investment starting from schooling to job-related skills. Adequate investment in human capital formation of the poor is perhaps the most pressing policy challenge facing Bangladesh in the coming years. This will require additional funding for health and education with an emphasis on quality and on eliminating the inequalities of access to relevant services for the poor. To be fully effective, the investment must start with the mother right from her education through marriage decision, pregnancy and child-raising. The inequalities affect at each stage with a cumulative downward spiral. Despite progress, the challenges for human development in all areas including education, training, health and nutrition are immense. These are discussed in detail in chapter 5.

Improving the Access to Finance for the Poor

The importance of access to finance for poverty reduction is well demonstrated by past poverty reduction experience in Bangladesh. The microcredit revolution supported by government policy has

made this possible. The PP2041 strategy will further build on this positive experience. The objective would be to expand the scope and access to microcredit for the poor, reduce the cost of credit and improve the broader access of the poor to institutional credit. Steps will be taken to improve the credit market through a range of measures including credit bureaus, credit guarantee schemes, and a range FinTech initiatives. The objectives will be to improve credit market information, reduce compliance and information costs and lower credit risk with particular focus on the poor. Another major policy initiative would be to seek to dynamize the small urban and rural enterprises in manufacturing and services by establishing a Small Business Development Authority (SBDA) as a one stop shop for promoting small business enterprises. Improved access to institutional credit would be a key function of the SBDA. The SBDA will build on existing institutions like the SME Foundation and the SME financing window of the Bangladesh Bank. The SBDA will be established through a collaborative effort between the Ministry of Finance, Ministry of Commerce, Ministry of Industry and the Bangladesh Bank.

Increasing Access of the Poor to the Migrant Labour Market

Evidence shows that international migration and remittance income inflows have been a major driver of poverty reduction in Bangladesh. District level analysis makes this contribution especially striking. Yet the analysis also shows that many of the poor and vulnerable districts, mostly in the Western part of Bangladesh, do not participate much in the migrant labour market for a whole host of reasons including high cost of migration, lack of training, and lack of access to information. PP2041 will seek to address these constraints systematically through initiation of training programmes for potential migrant workers, improving access to information and reducing cost of migration by eliminating the exploitative practices of the migration agencies. The Ministry of Expatriates' Welfare and Overseas Employment will take the lead through its field offices. The activities of the field offices in the Western districts of Bangladesh will be strengthened through higher staffing and greater outreach efforts. Priority will be given to districts with poor participation in the area of training. The government will also seek to facilitate credit to potential migrant based on expected future earnings through participating commercial banks.

Balanced Urbanization

The growing pressure on urban services from internal migration and the associated poor quality of city living especially for the poor can provide a major challenge for tackling urban poverty and maintaining law and order. The PP2041 will place a strong emphasis on ensuring a smoother transition from an agrarian economy to an urban-based industrial economy. In particular, the government is acutely aware of the need to improve the spread of urbanization through the empowerment of urban local government institutions (LGIs). International experience shows that a decentralized approach to urbanization that establishes autonomous city governments that is accountable to its residents is the only sustainable way of ensuring orderly urbanization. The government will support this decentralized urban development through political, legal, institutional and financial reforms. At the first stage, the target will be to establish at least 8 Regional urban centres: Dhaka, Mymensingh, Chattogram, Sylhet, Rajshahi, Rangpur, Barishal and Khulna. Dhaka, Chattogram and Sylhet are reasonably well established. So, the main focus will be to strengthen the urban infrastructure of the remaining 5 cities. It is a good strategy to establish eight regional urban centers in eight divisional cities. In addition to that, it is equally important to develop urban centers near megacity Dhaka.

Therefore, with the 8 (eight) divisional cities, there are three cities - Narayanganj, Gazipur and Cumilla which has been declared as city corporations. Therefore, the main focus should be eleven city corporations including eight divisional cities. Details are discussed in Chapter 11.

Balanced Regional Development

The government puts top priority to ensure balanced growth of the country. It wants all districts right from the village level to participate actively in the development process and enjoy the fruits of development. The government understands that due to geographic location and initial conditions some areas of Bangladesh are lagging behind. As a result, these areas have a higher concentration of the poor than the more prosperous districts. The Sixth and the Seventh Five Year Plans put considerable emphasis on balanced regional development through a range of policy initiatives including public development spending to improve farm production and district infrastructure, improving access to credit, and increasing connectivity between the remote districts with growth centres. The construction of the Bangabandhu Bridge and the ongoing Padma Bridge are important examples of this. Additionally, inter-city air transport and road connections have been strengthened. The PP2041 will further strengthen this effort with additional emphasis on inland water transport and upgrading of inter-city highways. The implementation of the urbanization strategy discussed above will be of special importance to reduce regional disparities.

Lowering Vulnerabilities of Districts to Climate Change and Natural Disasters

Of the 15 poorest districts of Bangladesh, most are characterized by high vulnerability to natural disasters owing to flooding, river erosion, sea level rise and other natural disasters. The example of Kurigram is particularly telling where the incidence of poverty was estimated by HIES 2016 at 70% even after 45 years of independence. It is well known that Kurigram is one of the most vulnerable districts in terms of natural disasters. Located at the mouth of the mighty Brahmaputra river, Kurigram gets flooded and inundated every year that wreaks havoc on its development efforts. There are similar examples of the link between poverty and vulnerability to natural disasters and climate change. The government has adopted a major long-term initiative called the Bangladesh Delta Plan 2100 (BDP2100) that seeks to improve the management of water, land, ecology, environment and climate change through strategies, policies, investment programmes and institutions. In particular, the BDP2100 seeks to address the vulnerabilities of Bangladesh caused by geography and climate change by addressing these risks right at the source. The associated strategies for flood control, water storage, irrigation, land management, agriculture, forestry resource management, and ecological balance will be major elements of the policy package for reducing poverty and improving environmental management during PP2041.

Sharply Improving the Poverty Focus of Social Protection Programmes

The present system of social protection needs to be replaced with faster implementation of the NSSS. This is a core element of the poverty reduction strategy of PP2041. The implementation of the NSSS will radically improve social protection system of Bangladesh and will also modernize employment practices through employment-based social protection financed by the private sector. Examples of these include health insurance, unemployment insurance, accidental insurance and maternity leave. Modernization of the employment conditions through proper incorporation of social protection schemes funded by the private sector is a core element of the NSSS and will be supported through

proper policies under PP2041. The government funding for the NSSS will be focused on life-cycle based core programmes for the poor and the vulnerable. These programmes will be adequately funded. Required institutional and administrative reforms will be implemented to eliminate misuse and improve efficiency. Most programmes will be cash-based and transferred on-line. A proper MIS system will be instituted to identify beneficiaries and do M&E as an input to the continuous effort to improve the delivery of the NSSS.

4.5 Addressing Income Inequality

Income inequality is an inherent feature of a market economy because of initial conditions whereby assets and human capital are unequally distributed. The core challenge for public policy is to improve the balance with proper policies and public spending programmes. Bangladesh can learn from the good practice examples of international experience. A review of international experience shows that Western European countries, especially France, Finland, Norway, Sweden, Denmark and Germany, and Canada, Japan and Korea enjoy high-income levels along with a reasonable level of income inequality. This has been possible by a combination of large and efficient public spending on health, education and social protection with a progressive system of personal income taxation as the main strategy for reducing income inequality. For example, Sweden spends 6-7% of GDP on education and 17-18% of GDP on social protection. Such amounts are outliers but illustrate the power of public spending. Bangladesh will introduce a redistributive fiscal policy under PP2041 such that the level of spending on health, education and social protection will expand considerably. These will be largely financed by an overhaul of the personal income taxation that is broad-based and progressive in nature. Much of the public spending on these programmes will be focused on the poor, the vulnerable and the low-income group.

4.6 Leaving No One Behind

The aspirations of becoming a high-income country require taking care of the most disadvantaged, the most vulnerable, the marginalized and the most excluded section of the population. The evidence says, the marginalized people are more likely to fall in the trap of poverty and be deprived of basic needs. The principle of SDG—leave no one behind—evidently reminds that without advancing their lives by protecting their social, economic, and cultural rights, the dream of achieving sustainable development and prosperous nation will remain far from reality. However, it will be difficult to improve the living standard without understanding the underlying causes of discrimination, disparity and social exclusion, especially from their perspectives. There are a number of groups, such as transgender communities, ethnic minorities both in the Chittagong Hill Tracts and the plain land, persons with disabilities, dalits, sex workers, people living in slums, street children, bede people, who are lagging behind the mainstream development process. No single measure is enough to address their challenges.

The government will continue to provide equal opportunities for all while taking measures for the marginalized people, beyond social protection. In the past plans, the improvement of the most vulnerable section of the society was mostly seen from the perspective of social security. The vision 2041 will be built on pursuing prosperity and at the same time inclusive society that caters for the need of the most vulnerable. The government will continue to upgrade the living standard of

ethnic minorities by fulfilling their socio-economic, political and cultural rights, safeguarding their language and culture, fully implementing the CHT Accord 1997, ensuring access to education, health care services, employment, and protecting land rights. The ethnic communities will be empowered through scaled-up investment in health, nutrition, education, agricultural technologies, employment generation, ICT, expansion of microfinance, and social protection. Steps will also be taken to increase the coverage of forest in the hill region and to protect the environment, and biodiversity. The government will undertake considerable measures to promote and protect the rights of persons with disabilities to facilitate their full participation in line with international and national commitments and policies. The disability issue will be mainstreamed in the national planning process including budgetary system.

Dalits, bede people, and sex workers are the most socially excluded groups who suffer from both economic and non-economic discrimination. The government will undertake special programmes to improve their lives, provide access to training and education, health care, nutrition, sanitation, employment, aside from the provision of special treatment in government jobs and ensuring their fundamental human rights.

CHAPTER 5

HUMAN DEVELOPMENT THROUGH QUALITY EDUCATION AND HARNESSING THE DEMOGRAPHIC DIVIDEND

HUMAN DEVELOPMENT THROUGH QUALITY EDUCATION AND HARNESSING THE DEMOGRAPHIC DIVIDEND

5.1 Overview

A fundamental theme of Vision 2041 and the associated Perspective Plan is the achievement of a development outcome where citizens will have a higher standard of living, will be better educated, will face better social justice, and will have a more equitable socio-economic environment. Indeed, strong progress with a well-thought-out human development strategy will be the key to secure UMIC and HIC status. The PP2041, therefore, puts a strong emphasis on improving human development both as a means of supporting GDP growth through a healthy and skilled labour force as well as to reduce poverty through productive employment.

5.2 Progress with Human Development under PP2021

The PP2021 set the stage by setting ambitious targets for human development. On the population health and nutrition side, it emphasized a further reduction in the rate of growth of population, sought to increase life expectancy and improve child nutrition. On the education and training front, it sought to sharply increase the literacy rates and basic education of the young and growing labour force that had low literacy and education skills. The human development targets, if achieved, would set up Bangladesh very nicely to move to an upper-middle-income country.

Evidence shows considerable progress was made in the Population, Health and Nutrition (PHN) area. The adoption of modern birth control practices has continued to increase, and the total fertility rate has continued to decline. As a result, the population growth rate has fallen further to around 1.2% and it is likely that the 1% population growth rate target for FY2021 will be achieved. The increase in life expectancy to 72.3 years in 2018, ahead of the target of 70 years set for FY2021, suggests that basic health care and nutrition standards required for survival have exceeded the expectations of the policymakers. Infant mortality rate further declined to 22 per 1000, in FY2018. The projected reduction on a long-term trend basis is 20 per 1000 in FY2021, somewhat short of the ambitious target of 15 set by PP2021. On balance the progress in reducing infant mortality is solid. Regarding maternal mortality rate, the progress up to 2018 is a reduction from 216 per 100,000 in FY2010 to 169 per 100,000. This is low compared to the target of 57 per 100,000 by FY2021, which will not be achieved. The inadequate progress with tackling maternal mortality is a major weakness of an otherwise good PHN delivery system. This requires urgent policy action. Progress with improving child nutrition is reflected in the reduction of stunting from 41.3% in 2011 to 28% in 2019. This is good progress and is indicative of improved nutrition policy adopted by the government during PP2021.

The above progress in the health sector has been underpinned by significant improvements on the institutional front including procurement, financial management and human resources (HR). The success of Bangladesh in the use of information and communication technology for health is also recognized widely and has drawn global attention. The government's development interventions in the health sector have always been geared to expanding health services, capacity development of the service providers and improving quality of care. The establishment of community clinics (CCs) nationwide is a flagship programme of the government and is recognized globally as a model for

providing low-cost primary health care services to the grass-root community population. The CC based service provision has led to increasing access of the poor (particularly women) to public health services and community participation. The government has also passed the 'Community Clinic Health Assistance Trust Bill, 2018' for ensuring the participation of rural people in health care services and for collecting donation for the Trust. The remarkable progress in achieving MDG-related health outcomes sets the stage from where Bangladesh is now ambitiously looking towards attaining the SDGs including universal health care (UHC) by 2030. However, in spite of the achievements, major inequities in health still exist and need to be addressed. There are challenges in addressing mortality rates due to non-communicable diseases (NCDs); reducing out-of-pocket expenditure; improving overall nutrition; improving facility readiness; improving service quality; regulating and managing the private sector; and accreditation for quality of care.

An area where the PHN strategy may face sustainability problems in moving forward is the low public expenditure on PHN. It has remained virtually stagnant at 0.7% of GDP for a fairly long time. While it is credit to the government that it has achieved such positive PHN outcomes with a low public budget, this may not be sustainable moving forward as the incidence of mass communicable diseases (cholera, malaria, TB, polio) falls and low-cost preventive and curative solutions for these diseases are replaced by a more complex and expensive pattern of epidemiology found in higher-income countries. While private expenditure will be the main source of PHN expenses as the country moves up the income stream, public spending on research and health insurance subsidies for the poor and the elderly will emerge as major expenditure items to enable PHN service access for the poor in both rural and urban areas. Additionally, the whole system of health insurance is a big missing item in the Bangladesh PHN strategy that needs urgent attention.

On the education and training front, the main highlight of the PP2021 strategy is to achieve Education for All (EFA) by FY2021. Related to this, the two specific targets were: (1) achieve 100% adult (15 plus) literacy; (2) achieve 100% net primary enrolment rate. Other objectives included increasing enrolments in secondary and tertiary education; improving education quality at all levels; improving the equity of education; improving labour force training and skills through a concerted skills development strategy; and increasing the spread of science and technology education.

Bangladesh has continued to make progress in improving adult literacy rates, growing from 58.6% in FY2010 to 73.9% in FY2018. Both male and female literacy rates have improved and the gap in female literacy rate over the male has continued to narrow. At the present trend rate, however, it is unlikely that 100% adult literacy rate will be achieved by FY2021. Bangladesh has made good progress in primary level enrolment and eliminated the gender gap. So, the target of universal primary education is substantially achieved. An important component of the government's EFA is the coverage of non-formal education (NFE). Progress with increasing the coverage of NFE continued under the PP2021, but there are important institutional constraints that need to be addressed to improve effectiveness[5]. It is unlikely that NFE will achieve 100% coverage by FY2021.

The expansion of secondary and tertiary education continued steadily under PP2021. Net secondary enrolment expanded from 46% in FY2010 to 67% in FY2018. Tertiary education expanded from 11%

5 See "Bangladesh Education and Technology Sector Action Plan" GED 2017.

to 21% over the same period. This good progress has been greatly facilitated by the government's liberal policy to allow the private supply of tertiary education. This is a major policy success for the education policy, especially given the still low coverage of tertiary education and financial constraint on the government budget. To further accelerate the expansion of tertiary education, the government in 2017 adopted the Strategic Plan for Higher Education in Bangladesh: 2017- 2031.

For labour training, the main strategy has been to strengthen the system of technical and vocational education and training (TVET). Formal TVET consists of SSC, HSC, and Diploma courses, HSC(VOC), SSC(VOC) and HSC(BM). The programmes include time-bound, institution-based, and graded training with formal certification. The courses are offered by Engineering Colleges, Polytechnic Institutes, Technical School and Colleges (TSCs), Technical Teachers' Training College (TTTC), Vocational Teachers' Training Institute (VTTI), Business Management Colleges and other technical and vocational institutes. The enrolment rate in TVET increased from 1% in 2009 to 16.05% in 2018. The number of private sector institutions is increasing, especially in the ICT sector and in response to opportunity for work abroad as skilled and semi-skilled workers in various trades.

The Government expressed its commitment to improving the TVET system through the implementation of the National Education policy-2010 and the National Skills Development Policy-2011. These policies envisaged the expansion, diversification, extension and development of technical and vocational education programmes. Under the National Skills Development Policy, National Technical and Vocational Qualifications Framework (NTVQF) has been designed to improve the quality and consistency of nationally recognized qualifications. Another significant initiative is the Skills for Employment Investment Program (SEIP) under the Ministry of Finance (funded by ADB and the government) which has partnered with a number of industry associations such as BASIS, BTMA, BGMEA, AEOSIB and others to impart vocational training with globally recognized skills certifications where appropriate. The Technical and Madrassa Education Division (TMED) has developed an integrated TVET development action plan to promote and strengthen TVET activities for the madrassa students.

These policies have enabled a steady expansion in the number of graduates from the TVET system. A major gap, however, is the mismatch between skills available and the job market. Manufacturing firms and high-end service enterprises continue to face a skill constraint and have resorted to hiring these skills from abroad.

Notwithstanding the greater emphasis on education and substantial progress, Bangladesh continues to face a number of challenges, pertaining to both quantity and quality. From a quantitative point of view, the issue of access and drop out, particularly at secondary and tertiary levels, are major challenges. Even at the primary level, the dropout rate was 18.6% in FY2018. As for higher education, the issues of inadequate funding and the lack of infrastructure and capacity (both physical as well as other infrastructural) are very important, which have limited the higher education enrolment rate to only 18% despite massive private investment. At all stages of education, quality is a critical area of concern, which is particularly acute at the primary education level that then spills over to the next stages of education.

The issue of quality in terms of cognitive skill and innovative and analytical capacity has become a matter of concern as the students are often found to lack basic technical skills even after completion of tertiary level of education. Owing to this, university/college graduates often find it difficult to compete in the job market. Additionally, lower student participation and low level of capacity at technical and vocational education along with a lesser focus on science and technology have also contributed to a skill gap in the employment market. The skills demanded at the workplace are not always provided by the education and training system. Resolving this skills gap will require careful and timely intervention.

One of the underlying reasons behind the quantitative as well as qualitative challenges is the low budgetary allocation for the education sector, falling to below 2% of GDP in recent years. There is now a programmed recovery to 2.5% of GDP in FY18, although full implementation of this higher allocation is uncertain. The low budget allocation is often considered as the most important constraint limiting the successful implementation of the education and training strategies and policies.

There are also concerns about the equity of education spending and the remaining gender gaps. From an equity point of view, the gross enrolment rate for the poor at the secondary level is only 24%, which is significantly lower than that of non-poor (76%). On the gender front, although there has been substantial progress in closing the gender gap at the primary and secondary levels, the picture is quite different when it comes to tertiary education. One of the reasons for the low participation of females in the labour market of Bangladesh (36.3% according to the FY2017 Labor Force Survey) and high concentration on low paying, low productive jobs is the low level of participation of females at tertiary level of education. Female students at public and private universities on average account for only around 26% of university students.

5.3 PP2041 Vision for Human Development

The PP2041 Vision for human development is driven by the core growth and poverty targets to achieve high-income status and mostly eliminate absolute poverty by 2041. Specifically, the Vision comprises of the following:

- Institution of a knowledge-based economy.
- Population with 100% literacy rate defined in terms of demonstrated ability to read and write in the national language.
- Universal free education for up to 12 years.
- Flexible supply of training institutions for all who seek to acquire job-based skills.
- Universal access to health insurance schemes at affordable prices.
- Mainstreaming of TVET for readiness for Industry 4.0.
- 100% coverage of employment-based accidental and health insurance schemes for all workers in the organized sector.
- Employment of 1000 youth (both male and female) should be ensured every year from each Upazila.

5.4 PP2041 Targets for Human Development

The targets for human development that will help realize this vision are indicated in Table 5.1. These are ambitious targets but consistent with the situation prevailing in high-income countries.

Table 5.1: PP2041 Human Development Targets

Indicators	FY2018 (base year)	FY2031 (mid-term)	FY2041 (target)
A. Health and Population			
Life Expectancy (years)	72.3	75	80
Population Growth Rate (%)	1.2	1.0	1.0
Maternal Mortality Ratio (MMR) (per 100,000 live births)	169	70	36
Infant Mortality Rate (per 1000 live births)	22	15	4
Underweight of Under 5 children (6-59 months) (%)	33	5	2
Stunting (%)	31	15	2
Total Fertility Rate (TFR) (%)	2.05	1.8	1.8
Coverage of health insurance (%)	Insignificant	50	75
Public spending on health (% of GDP)	0.7	1.5	2.0
B. Education and Training			
Adult literacy rate (%)	72.0	100	100
Net primary enrolment rate (%)	97.9	100	100
Primary school dropout rate (%)	19.1	0.0	0.0
Net secondary enrolment rate (%)	62.3	90	95
Secondary school dropout rate (%)	38.3	0.0	0.0
Tertiary enrolment rate (%)	17.8	50	80
Percent share of female students in tertiary education (%)	26	50	50
TVET enrolment rate (%)	16.05	30.00	41.00
Public spending on education (% of GDP)	2.0	3.5	4.0

Source: GED Projections. Base year data refer to latest available.

Bangladesh already has a good track record on health. Consolidating the gains from ongoing initiatives and focusing on areas of concern should allow Bangladesh to secure the health targets highlighted in Table 5.1. Furthermore, in line with the SDG targets, Bangladesh hopes to achieve universal health coverage (UHC) by 2030. Education and training challenges are more intense given the existing gaps. The quality challenge is especially intense and will require strong coordinated efforts. Success with education targets will be a key determinant for moving forward with the overall growth and poverty reduction targets for PP2041.

5.5 PP2041 Strategy for Population Health and Nutrition

The PP2021 strategy for PHN was to combine the public delivery system with the private sector. The main focus of public PHN delivery was to serve the needs of the rural community where private PHN service delivery at low-cost is very limited. Much of the PHN public services were focused on simple low-cost supply delivered through rural clinics and health workers. This model was already tested with good outcomes since the early years of independence. In the urban areas, PHN services relied much more on private supply at market cost. One of the major factors underlying the success of this model is the high demand for private healthcare and the large volume of private spending. The PP2041 will essentially continue this successful strategy of public-private partnership by promoting private supply of health services for most of the population while also enforcing accountability for quality service delivery and to prevent willful negligence, and focusing public supply for the rural

communities, areas not served well by private sector and on urban poor; on mass communicable diseases; on health research and training based on a system of high quality public national hospitals; and on nutrition programs. The main elements of the PP2041 PHN strategy are:

- **Expand public health clinics and improve quality:** PP2041 will strengthen and upgrade rural health clinics; extend health clinics to areas that are not well served by private supply; and introduce public health clinics for the urban poor. The quality of these clinics will be upgraded through appropriate staffing and supply of essential medicines. Taking advantage of modern technology, these clinics will be linked up with national research hospitals for e-consultations for high-risk cases.
- **Strengthen district-level hospital care:** Public hospitals at the district level will be strengthened to ensure access to proper medical care for those who cannot afford private hospital care or do not have access to national hospitals owing to capacity constraints. In view of the growing share of ageing population, emphasis will be given to developing the capacity to handle geriatric patient care. This will be an important element of the government's strategy to achieve the SDG goal of UHC by 2030.
- **Strengthen national hospital:** Emphasis will be placed on strengthening all existing national hospitals for quality teaching and research and for the treatment of complex health cases.
- **Eliminate child nutrition gaps:** Strong efforts will be made to strengthen pubic nutrition support programmes through adequate staffing and resources with a view to eliminating the incidence of stunting and wasting by FY2041. The nutrition education campaign will be strengthened in partnership with NGOs to reach out children in hard to reach areas, children of poor rural families, and children in the urban slums.
- **Strengthen private health care delivery system:** The private sector plays a major role in curative health care delivery. This system will be strengthened through flexible licensing, promoting FDI in health care including flexible policies for use of international healthcare professionals, ensuring full compliance with government regulations relating to the quality of care and rights of patients, and ensuring accountability for willful negligence in service delivery.
- **Introduce health insurance schemes:** Curative health care is expensive and health shocks are an important reason for pushing the borderline poor back into the poverty trap. So, the development of a proper health insurance system is absolutely necessary. PP2041 will establish this system with a balanced combination of private supply of health insurance programmes and public financial support for insurance schemes for the poor and vulnerable population. The public health insurance support programmes will be a part of the social protection programme of the government and access to these schemes will follow the same principles as access to other social protection schemes. A sound health insurance system is essential to achieve the SDG target of UHC.
- **Improve the quantity and quality of health professionals:** Growing demand for adequate health care requires an adequate supply of health care professionals, especially doctors and nurses. The PP2041 strategy for upgrading of health care professionals will

consist of higher investment in public and private medical education, stronger training including through the public national research and teaching, instituting health information and exchange and online training with international medical universities, and inviting international health experts for imparting national training.

- **Strengthen health sector governance:** The PP2041 will strengthen and enhance the regulatory functions and supervisory role of the Ministry of Health and Family Welfare (MOHFW) including the agencies under it by increasing capacity of the relevant bodies, and establishing/updating standards and accreditation systems and legal frameworks to ensure quality healthcare services including drug administration in both public and private sectors.
- **Improve health information systems:** PP2041 will improve the health MIS through scaling up of the routine health information system along with e-Health, timely qualitative reporting from all reporting units of both public and private sectors, capacity building of health managers and appropriate use of information technology. Generation of information flow and use of authentic data will be a key to success during 2041. The full potential of ICT will need to be explored for ensuring an improved health system suited to the needs of a HIC.
- **Safe disposal of medical waste:** PP2041 will place emphasis on the development of a well- thought out medical waste disposal system available to ensure public health safety.
- **Boost private investment in the pharmaceutical industry:** Bangladesh has already established a good track here. PP2041 will build on this experience and strengthen support for private investment and quality control for drug manufacturing and distribution through strengthened testing and certification process.
- **Increase public health spending:** PP2041 recognizes that the low-cost delivery options for public health that served Bangladesh so well in the early stages of development are now nearly exhausted and public health spending has to go up substantially to improve more complex health issues, improve quality of public health care, increase health care coverage for the urban poor, and finance research and training. Accordingly, PP 2041 will seek to increase public healthcare spending from 0.7% of GDP now to at least 1.5% of GDP by FY2031 and 2.0% of GDP by FY2041.

5.6 PP2041 Strategy for Education and Training

The education and training targets for PP2041 have been indicated in Table 5.1. Accordingly, PP2041 education and training strategy will need to be carefully formulated based on learning from the past Bangladesh experiences and good practice international experiences. In particular, the challenge of education and training quality will require careful delivery strategy and funding need will be large. Another major challenge is to convert the ongoing demographic transition, whereby the share of the active population (age 15-64) is increasing relative to the total population, to a true development dividend. The potential is there but it will not automatically convert to a dividend without a careful strategy to convert this age group into a well- educated and trained labour force through appropriate investments and incentives in education and job-based training. From both delivery capacity and funding perspectives, public sector alone cannot address these challenges and a strong public-private

partnership with coordinated investments and enabling policies will be essential. The partnership will be strategic where the private sector will play a dominant role in tertiary education and skill training whereas the public sector will be dominant in primary and secondary and higher secondary education and in ensuring equity considerations in education. For both delivery system, emphasis on quality will be the major theme.

The main elements of the strategy are:

A. Strategy for primary and secondary education

- ***Strengthen public-private partnership:*** PP2041 will further strengthen the partnership between public and private sectors in the delivery of primary and secondary education. The public sector will have the primary responsibility to ensure that each child goes through a minimum of 12 years of education by FY2031. Supply of private schooling for those who can afford will be further stimulated through policy and regulatory support. Appropriate policy measures should be taken to strengthen to reach out children in urban slums, hard to reach areas and out of school children.
- ***Enhance education quality:*** Emphasis will be placed on sharply increasing the quality of learning at each stage of the education cycle starting with primary education through strengthening of the quality of education inputs including physical facilities, teaching professionals, curriculum, books and supplies and parent involvement in primary and secondary schooling. Early child learning programme shall be mainstreamed all over the country by adopting a programmatic approach to the expansion of early learning. Strong emphasis will be placed on science, maths and language skills. ICT education will be emphasized from the primary level.
- ***Eliminate education wastage:*** The dropout rates for both primary and secondary education will be eliminated by FY2031 to prevent waste of resources and provide 12 years of education for all. Quality improvements in primary and secondary education will help reduce dropouts. Decentralization of education delivery and parent involvement in school administration will also help. To the extent child marriage is responsible, the government will ensure monitoring and full implementation of anti-child marriage laws, including preventive measures such as information dissemination through campaigning and community participation and parent counselling.
- ***Streamline and improve quality of madrassa education:*** The madrassa education will be brought into the fold of mainstream education with proper accreditation and focus on curriculum that allows learning of science, maths, English and ICT skills. Attention will be given to improve the quality of madrassa education through upgrading of school facilities, teaching professionals, books and supplies and ICT facilities.
- ***Securing the demographic dividend:*** Converting the demographic potential to a true dividend will require two major actions: a sharp expansion in secondary school intake; and imparting training to the workforce, especially the female workforce. In this regard, equity concerns are paramount. Many of the 23% of the labour force who are presently illiterate were left behind from early schooling for a number of reasons including lack of

access. The PP2041 will put particular emphasis on ensuring full free education for all up to grade 12 by FY2031. This is the surest way of ensuring that the demographic potential is converted to a dividend. A phased approach is needed. In the early years, the focus will be on completion of primary and secondary education (not just enrolment). Subsequently, effort will be expanded for post-secondary additional 2-year education. The PP2041 will put particular emphasis to reach out children in hard-to-reach areas, urban slums and rural poor families in this drive for completion of 12 years of compulsory education. Incentives in terms of stipends, free school meals, and free preventive health checkups for these children from poor families will be emphasized.

- ***Promote decentralization of school service delivery:*** The present centralized delivery of public education will be revisited with emphasis on decentralization. The PP2041 recognizes that a highly centralized structure of education governance with decision-making and management concentrated in the capital city for such a large and growing student and teaching population is not efficient. International experience from high-income countries shows that education is best delivered by local government institutions. These LGIs have much better knowledge and community interaction about the education needs of the local residents and will also be held accountable through local elections. Policymaking and funding will continue to be provided by the national government. Local governments will be strengthened to deliver this responsibility. Over time as LGI capacities expand and local level resource mobilization happens, public education funding will become a joint responsibility between national and local governments.
- ***Strengthen delivery of non-formal education:*** PP2041 will give the highest priority to implementing the government's policy of education for all including the elimination of adult illiteracy by strengthening the delivery of non-formal education. Specific steps that will be taken include: establish a community-based network of learning centres in order to create scope for ICT based continuing and lifelong learning; continue with "second chance" schooling; extend opportunities for effective skill training; strengthening of delivering all aspects of the non-formal education strategy; and establish non-formal Education Board.

B. Strategy for higher education

- ***Strengthen role of private sector:*** Education beyond 12 years of schooling will primarily be a private sector responsibility. The surge in private investment in higher education in recent years is encouraging and indicative of the capability of the private sector to take on this role. Public provision of higher education will continue with a focus on areas where private investment is lacking, on closing the gender gap in tertiary education, and in science, technology and medicine.
- ***Enhance quality:*** The standard and quality of colleges for higher education will be enhanced by providing necessary library, laboratory & IT facilities and by offering appropriate training for the teachers. ICT courses would be introduced in all of the post-graduate colleges of Bangladesh. Accreditation process will be strengthened to pay due attention to quality aspects of private colleges and universities in terms of physical facilities and staffing quality.

- ***Promote equity:*** To ensure equity, need-based public scholarship programs will be provided for students who demonstrate the required competencies and meet the admissions criteria in private colleges and universities.
- ***Eliminate gender gap:*** The gender gap in higher education will be eliminated through scholarships for women and emphasis on establishing public colleges for women at each district level.
- ***Strengthen University Grants Commission (UGC):*** The UGC will be empowered to take a leadership role in strengthening university education and advanced academic research. This will include restructuring the UGC to strengthen its capacity as the leader in the policy matters and ensuring transparency and accountability in the academic, financial and administrative affairs in the government and private universities.

5.7 Strategy for Training and Skills Formation

- **Strengthen delivery of the National Skills Development Policy (NSDP 2011):** In addition to ensuring 12 years of compulsory schooling, strong efforts will be needed to raise the skills profile of the workforce in order to reap the full benefits of the demographic dividend. Despite government efforts to improve the skill base of the workforce through emphasis on vocational training through the TVET programmes, a substantial gap remains. PP2041 will pay strong attention to this policy challenge. An immediate priority will be to fully implement the vision and mission of the NSDP 2011. Efforts will be made to diversify technical and vocational education programmes to meet the technical manpower needs in the areas of emerging skills gap including the ICT sector. The NSDP will serve as a flexible policy instrument and will be updated as necessary to address emerging challenges in the market for skilled labour as the economy moves forward.
- **Facilitate women participation in technical education and skills training:** Another policy focus will be to encourage more women's participation in vocational training. This is again very important to reap the benefits of the ongoing demographic transition of a growing share of the working-age population. Some 50% of this population is female. Yet, as noted earlier, the female labour participation rate is still only 36% partly owing to lack of education and labour skills. So, in addition to eliminating the gender gap in all forms of education, the gender gap in vocational education and skill-based training will be narrowed and ultimately eliminated.
- **Emphasis on rural training:** Training and skill formation in the rural areas are lagging. The PP2041 will pay attention to develop and modernize the existing TVET Institutes with available rural technologies to meet the challenge of the fast-changing economy in the rural setting. Attention will be given to establishing rural-based training institutes in high-demand areas to facilitate the participation of women.
- **Strengthen public-private partnership in delivery of training:** Global good practice experience suggests that public-private partnership in the delivery of vocational education and training is essential. The PP2041 will place a strong emphasis on this. On the job-training through partnership with business enterprises will be emphasized through access

to public funding of approved training programmes. Existing TVET programmes will be streamlined in line with job demand. New public investment will emphasize programmes where job demand is high. Private demand-driven training programmes will be encouraged through access to public grants.

5.8 PP2041 Financing Strategy for Education and Training

Substantial financing will be needed to upgrade the quality and increase the quality of education and training under PP2041. The main elements of the financing strategy are:

- **Sharp increase in budget funding:** In FY2019-20, the government allocated 87.620 crore taka which is 16.75% of budget and 3.04% of GDP. The strategy is to increase public spending on education and training to 4% by FY2031 and to 6% by FY2041. Funds will be allocated appropriately to realize the education and training targets identified in Table 5.1.
- **Mobilize local government finances:** As the decentralization of education services proceed and LGIs are strengthened, emphasis will be placed on mobilizing local finances. The property tax has the most potential and this will be used to mobilize LGI resources in line with the government's fiscal decentralization policy.
- **Improve quality of public spending:** Emphasis will be placed to improve the quality of spending by focusing on timely completion of all ongoing projects and by setting time-bound priorities that are consistent with the strategies specified above. In particular, public spending on new investments will be carefully selected in coordination with private provision to support specific objectives like promoting equity, eliminating gender gap, and promoting science and technology.
- **Boosting private financing of education and training:** Private spending on education is substantial and much higher than public investment. Public policy will further provide incentives including tax concessions, supportive regulatory policies, and grants to support equity programmes in private education.

5.9 Beyond Human Development: Values, Culture and Heritage

A developed nation must cherish the attribute of good citizens – abiding of laws, building the habit of cleanliness of surrounding environment, following certain invisible norms and behaviour, treating women, elderly with respect, tolerance of different faiths and beliefs etc. The development of nations hinges on the social and cultural make up of its population since this predicts the response, capacity and efforts made individuals in nation building and also affect the decisions that they take in their lives. Upholding the culture is upholding the characteristics and profile of a nation's population and this has a strong influence in the way the population engage with each other and for the welfare of the nation as well. Bangladesh has a rich cultural history and has significant archaeological assets dispersed across the country. In addition to that, in terms of literature, music and arts, the intellectuals of the country are continuing to make progress. In today's global village, it is the citizen's duty to showcase the cultural heritage and contribute to the progress of future generations and to the world. Intrinsic to a nation's identities is also the religious beliefs and practices, which is again an integral part of the cultural fabric of our nation.

Bangladesh has traditionally been a tolerant society with co-existence of people from different religions and practices. In the world that we live in at present, indiscriminate freedom to practice one's religious beliefs and respect of all religions is an essential part of development of nations and required for excelling actively in the global economy.

As Bangladesh embarks upon its Perspective Plan 2021-2041, it is essential to also set concrete plans to ensure continued proliferation of the culture, heritage and religious practices of the country. Bangladesh is a nation with over one-third youth population and this segment of the population is our national demographic asset. It is imperative for Bangladesh to provide its youth population with the physical and intellectual skills to perform to their full capacity and drive the growth and prosperity of the nation. In addition to that, the challenges facing the nation related to climate change, militancy, an ageing population and continued poverty can only be addressed by investing in the future generations that are the youth of today. The government has been devoted to the development of youth and plans to continue investing in their future in the upcoming decades, so as to pave the way to achieving the development goals and commitments at the national level and the international level such as Sustainable Development Goals (SDGs).

CHAPTER 6

SUSTAINABLE AGRICULTURE FOR FOOD SECURITY AND RURAL DEVELOPMENT IN A HIGH-INCOME COUNTRY

SUSTAINABLE AGRICULTURE FOR FOOD SECURITY AND RURAL DEVELOPMENT IN A HIGH-INCOME COUNTRY

6.1 Introduction

In keeping with the stylized facts of structural change during the development phase of an economy the share of agriculture in GDP has been on a secular decline, from about 60% in the 1970s down to only 13.31% in FY2019. Agricultural growth has accelerated from less than 2.76% per year during the first two decades after independence to an average rate of about 3.9% per annum, during 2011-19. Whereas Bangladesh began its journey as a rice deficit country, perennially dependent on food aid to feed its population, that dire situation has been turned around by Bangladesh's toiling farmers supported by effective policies of the Government and significant contributions of research and extension institutions. Despite the diminution in agriculture's share in GDP, it will continue to play a pivotal role in Bangladesh's future prosperity as the production sector that ensures food security and nutrition of the population and provides farm and non-farm employment for the bulk of the rural population. With 65% of our population still living in rural areas and relying for their livelihoods on agriculture, rural development in the future will be synonymous with highly efficient and productive agriculture—the thrust of agriculture sector strategy of PP2041.

The Fisheries sector has proven to be one of the most productive and dynamic sectors in Bangladesh, experiencing a revolution of sorts for the last few decades. The fisheries sector contributes 3.50% to GDP and constitutes one-fourth of agricultural GDP. Considering the contribution of the fisheries sector in national economy Bangladesh government is implementing result-oriented specific programs for sustainable fisheries management through innovation and dissemination of environment-friendly new fisheries technologies. According to the FAO report *The State of World Fisheries and Aquaculture 2018,* Bangladesh ranked 3rd in inland open water capture production and 5th in world aquaculture production. More than 11 percent of the total population of Bangladesh are engaged with this sector in full time and part-time basis for their livelihoods. About 80% women are working in fish processing plant especially in the Khulna region. Department of Fisheries encourages women empowerment by engaging interested women in fish processing activities.

The livestock sector, which contributes 1.47% to GDP and makes up 13.31% of agriculture GDP, plays a critical role in the agricultural intensification process through the provision of household nutrition, employment generation, poverty alleviation, women empowerment, and producing renewable energy and manure. Livestock also contributes to food security through increased output of livestock products and the creation of employment and income generation that assures access to food.

6.2 Analysis of the Shifting Paradigm in Agriculture and Food Security

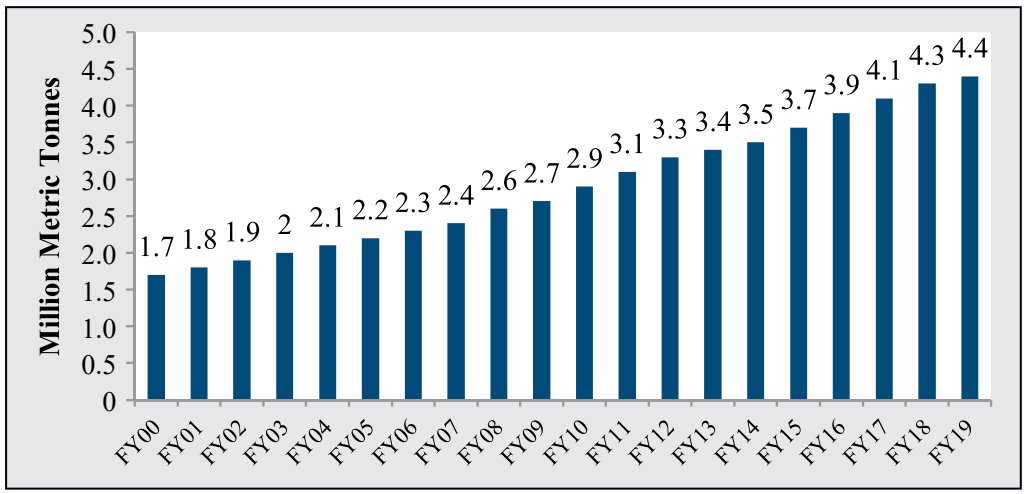
With the spread of high-yielding varieties (HYVs) of rice, the predominance of Boro crop with irrigation and use of chemical fertilizers, it was the 'Green Revolution' that enabled Bangladesh to increase food availability to meet the demands of a rapidly growing population. Rice production nearly quadrupled from 10 Million Metric Tons (MMT) in the 1970s to 36.4 MMT in 2019, helping Bangladesh achieve self-sufficiency in rice production and ensuring food security. Besides,

a significant production increase of non-rice crops like maize, wheat, potato, oilseeds, pulses, vegetables and fruits contributed to a great extent in the process of achieving food and nutritional security. This has also been instrumental in raising farm incomes and increasing real agricultural wages, thereby contributing handsomely to rural poverty reduction.

A paradigm shift in agriculture is taking place at a rapid pace which will be sustained into the 2040s. As incomes rise, the structure of demand for food has also exhibited shifts towards improved nutritional intake. Considerable consumption diversification has taken place, with lesser per capita consumption of rice and increased consumption of high-value food items such as meat, fish, milk, vegetables, fruits, and edible oil. Supply response has mimicked demand shifts with diversification of production from rice agriculture to increased production of non-cereal crops. Growth of non-crop agriculture – fisheries, livestock, poultry, and horticulture – has outstripped crop-agriculture growth.

Growth in fisheries production for the past few decades has led to an aquaculture revolution. The exemplary overall growth performance of inland aquaculture was due to need-based extension services at farmer's level and implementation of development projects. Total fish production more than doubled to 4.3 million MT during FY2000-2019 (Figure 6.1). Recently Bangladesh has become self-sufficient in fish production. Bangladesh achieved self-sufficiency in fish production with a per capita fish consumption of 62.58 gram per capita per day against the set target of 60 gram per capita per day (HIES, 2016).

Figure 6.1: Increased Trends in Fish Production in Bangladesh



Source: Yearbook of Fisheries Statistics of Bangladesh

This growth has been supported by increased private investments in non-crop production and in the food processing industry. Supply response to changes in demand patterns is pushing agricultural diversification and a paradigm shift from cereal-cereal cropping patterns to cereal and non-cereal based high value cropping patterns with value-added products, including the expansion of horticulture, pulse and oilseed crops. Livestock and fisheries, now the fastest-growing component of agriculture, will have to continue growing at their present pace or even faster to catch up with demand growth.

6.2.1 The drivers of paradigm shift in agriculture for the next decades

Driver 1: Soil fertility and fertilizer use: Increase in food production and attaining self-sufficiency in Bangladesh requires sustainable growth of the agricultural sector in order to supply adequate food for its increasing population. Balanced fertilization is the key to enhancing crop productivity and maintenance of good soil health. Apart from the natural factors, a major reason for soil fertility decline is unbalanced use of fertilizer. Awareness-raising for balanced fertilizer application and popularization of more efficient fertilizer application techniques, can help preserve soil quality, raise output, lower costs of production. Food production of this country can be increased through expansion of HYVs and balanced use of fertilizer. Timely supply and availability of fertilizer will receive top priority under PP2041 to increase crop production in Bangladesh over the next decades.

In line with the Government policy, urea use decreased while TSP and MoP use increased since 2012-13. Although the government is trying to promote balanced use of fertilizers for crop production through the implementation of fertilizer policy and New Agricultural Extension Policy there still exists a high extent of imbalance fertilizer use at the farmers level. Crops should be fertilized following integrated plant nutrition system (IPNS) taking required nutrients from both organic manure and chemical fertilizers in combination. Conservation agriculture (CA) practices such as retaining and incorporating certain portions of crop residues in soil may be helpful in managing drought-prone soils. Inclusion of legume crops in the cropping may be beneficial in retaining soil fertility. Organic farming practices should be encouraged in order to get safe harvest of vegetables and fruits and protecting soil and water resources from pollution. There is a knowledge gap of the farmers on the recommended fertilizer dose. Promoting balanced fertilizer use could be an important tool for improving agricultural productivity in the next decades. Systematic efforts will be made to provide guidance for organic fertilizer and bio fertilizer use for sustainable agricultural production and maintaining soil health and fertility.

Driver 2: Irrigation: Expansion of minor irrigation through groundwater using DTWs and STWs was the vital component of the GoB's strategy to facilitate irrigation for agricultural development. Agricultural growth in the country has been largely due to the expansion of minor irrigation with private sector investment. There was an increasing trend of irrigation growth in Bangladesh from 1982 to 2014. Privatization of minor irrigation equipment was the critical factor that stimulated irrigation use in agriculture.

Rice production accounts for 93% of the total Consumptive Water Use (CWU) and 90% of the total irrigation CWU in Bangladesh. Boro rice accounts for almost all the irrigation CWU of rice. The total irrigation water demand (CWU) for Boro rice production in Bangladesh was 11.8 billion cubic metres in 2000 with 265 mm per ha CWU. It is projected that water demand for Boro rice in 2031 will be 17.23 billion cubic metres after this period it will stabilize and would remain at 17.23 Billion cubic metres in 2041 of which 13 Billion cubic metres would come from groundwater.

In order to meet future water demand in 2031 and 2041, groundwater use has to be economized. Groundwater is the source for more than 75% of the irrigated area in Bangladesh. It contributed to about 13 Billion cubic metres of irrigation CWU in 2010. In order to reduce groundwater use, we need to increase water use efficiency in crop production and enhance the utilization of surface

water irrigation. Given the falling groundwater tables and water quality issues in Bangladesh, it will be extremely difficult to exploit groundwater resources. The country possibly can't afford further extraction of groundwater during dry season needed for irrigation of boro rice because of the risk of arsenic accumulation in some intensive areas due to overexploitation. In order to minimize groundwater use, cultivation of non- rice crops particularly maize and mung bean may be encouraged during boro season. Increased irrigation efficiency instead of flood irrigation, localized irrigation method such as smart and sensor-based irrigation will be introduced among farmers, especially for horticultural crop production.

Driver 3: HYV Seeds: During the 1990s to 2000s the seed market has been liberalized with the New Seed Policy 1993, Seed Amendment Acts 1997 and 2005, and the Seed Rules, 1998 and opened the market for participation and rise of private enterprises in seed production, import, and distribution. 'In Bangladesh, the national requirement for quality seeds of all crops in 2017-18 was 12.52 lac metric tons and for the upcoming decades, it could be more than 12.52 lac metric tons. Agricultural growth is dependent on a very wide-scale switch to HYV seed, but seed quality, in general, remains a major problem. Various related investments are needed to enhance the provision of quality seeds in adequate quantities. Some of the non-government organizations and the private sector have started to enter the seed sector with positive impacts on availability, although quality still remains a vexing issue in some cases. Strengthening of the research programmes of NARS Institute, the capacity of SCA and seed multiplication programme of BADC are inevitable in order to ensure quality seeds for the farmers. The bridging of linkage gap among NARS-BADC-DAE-Farmers is an utmost task to overcome the quality seed issue in need. To ensure food security and sustainable rice farming, seed industry should be expanded in community-based farmers' seed production group by providing technical knowledge and input support from relevant Government institutions.

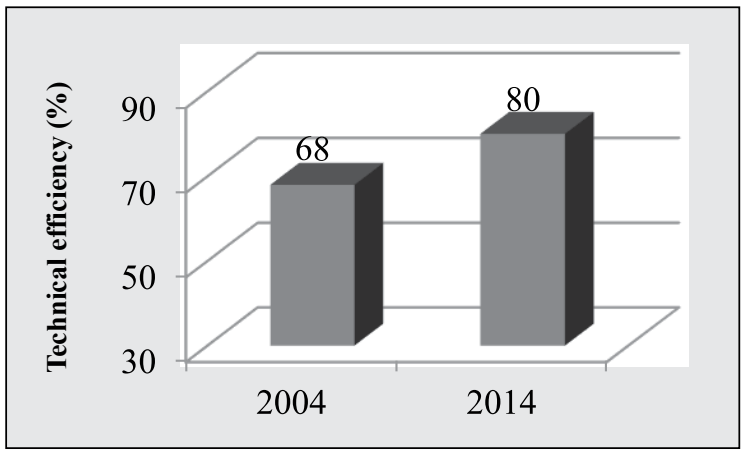
Driver 4: Agricultural credit: Agricultural credit, as an input, plays an important role in driving the agriculture of Bangladesh towards a sustainable level. Food security, employment generation and poverty alleviation are closely linked with the development of the agriculture sector. While the demand for credit is increasing with the advent of new technologies and high-value crops, the supply side has remained less vibrant. According to data of the Bangladesh Bank, around 25 percent total disbursement of rural credit is delivered by the public sector. The remaining 75% has been delivered by micro-finance institutions (MFIs). The demand for credit is much more than that met by non-institutional sources.

Driver 5: Technology generation: Emphasis should also be given to safe food production, pollution control, resource conservation, soil health sustainability and biotechnological intervention. Supports are needed for the development of intensification, diversification and resilience to climate change putting SDG and Delta Plan initiatives in front. This strategy will be continued during the next two decades. In order to achieve such goals, the work of scientists will be evaluated. and incentivized in due course. In line with "Amar Gram Amar Shohor" of the government, technological services will be expanded at the communities by establishing Rural Technology Centres and business services in strategic locations of rural Bangladesh. This will also help to increase rural jobs and create complementarity between rural farm and non-farm sector.

Driver 6: Agro-processing, value chains and exports: The size of food processing sector is worth US$ 2.2 billion and grew on an average at 7.7 percent per annum between FY2005 and FY2015. The food processing sector is thus growing rapidly with prospects for continued growth as Bangladesh's GDP continues to grow. Bangladeshi fish and fishery products are exported to more than 50 countries including the European Union (EU), USA, Japan, Russia, China etc. EU countries are the major importers of Bangladeshi fish and fishery products. Bangladesh exports over $700 million worth of processed food and beverages, of which over 60 percent are shrimp and fish products. Industrialists and private entrepreneurs should be encouraged for production of processed value-added agricultural foods ensuring quality and protecting them by attractive and durable packaging. Export of fresh fruits and vegetables from Bangladesh significantly increased in the past decade. This trend will have to be maintained with supporting trade policies. Agricultural commodities like maize, potatoes, tomatoes will be properly processed for conversion to value-added food items for export. The quality of the products must be ensured through testing in the accredited laboratories to enhance the trust of the international buyers.

Factor productivity has been increasing: Given the declining trend in cultivable land, there has been a focus on raising productivity as the key to increasing production in the agriculture sector. This has helped, and Bangladesh has been witnessing a rise in the Total Factor Productivity (TFP) of rice. The TFP of total rice production increased by 1.9% during 2004-2014. It, therefore, implies that significantly more rice output could be produced in 2014 compared to using the same level of inputs used in 2004. It shows that there is a considerable improvement in the mean technical efficiency of the farmers over the last decade (Figure 6.2). The main driver of reducing inefficiency in rice production was the human capital of the farmer, i.e., education, training and experience of the farmers.

Figure 6.2: Farm Specific Mean Technical Efficiency of Sample Farmers



Source: PP2041 Background Study on Agriculture Sector

Per capita rice consumption has been declining: As can be expected, with increasing GDP growth, the structure of demand for food in Bangladesh has also exhibited changes. The successive HIES Reports show that considerable consumption diversification has taken place, with lesser per capita consumption of rice and increased consumption of high-value food items such as meat, fish,

vegetables, fruits milk and edible oil (HIES 2005 and 2010). As shown in Figure 6.3a-d below, there has been a secular decline in per capita rice consumption though per capita total food intake has been going up reflecting that consumption and production patterns are following similar trends.

Figure.6.3a Declining Per-Capita Consumption of Rice in Bangladesh

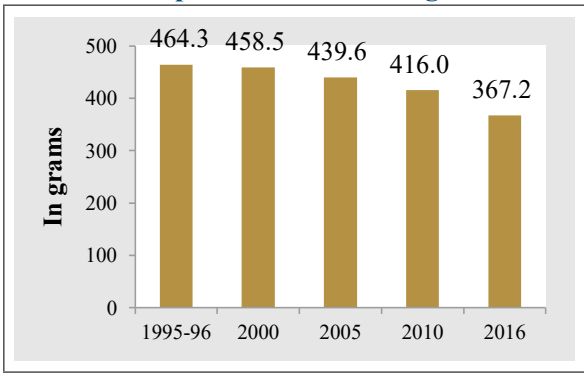


Figure.6.3b Increasing Per-Capita Consumption of Vegetables in Bangladesh

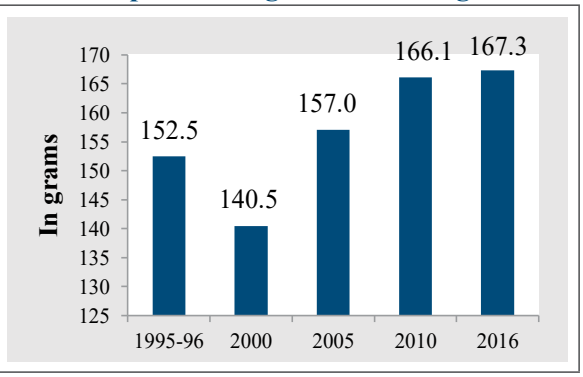


Figure.6.3c Increasing Per-Capita Consumption of Eggs in Bangladesh

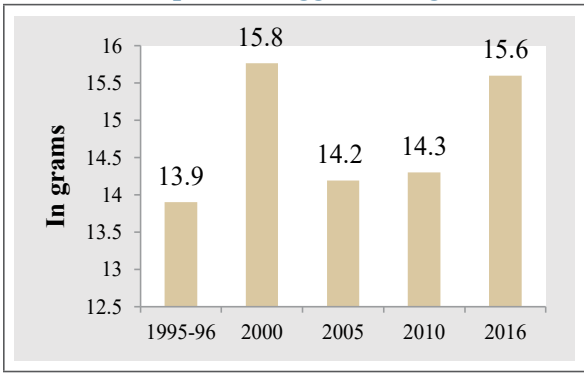
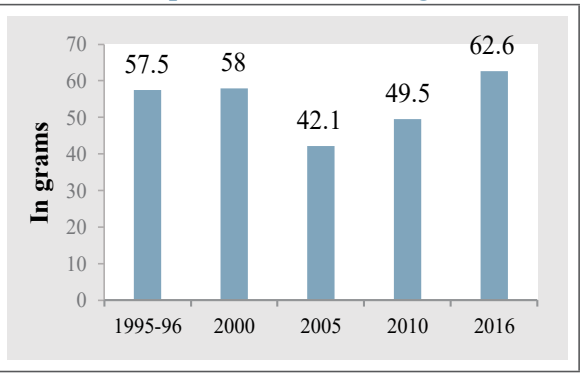


Figure.6.3d Increasing Per-Capita Consumption of Fish in Bangladesh



Source: Household Income and Expenditure Survey (HIES) 2016, BBS

There has also been diversification in the sector: During this period there has also been some degree of diversification from rice agriculture with increased production of non-cereal crops like wheat, potato, oilseeds, maize, and pulses; and commercial high-valued crops, particularly those of fruits and vegetables. Between 2007-08 and 2018-19 period, the area under cultivation of wheat, maize, oilseeds, spices, potatoes and vegetables increased. Spectacular success has been achieved in the production of potatoes. It has increased significantly from 2.90 million tonnes in 2001-02 to 9.65 million tonnes in 2018-19. The production of vegetables and fruits also increased, but at a slow pace from 1.59 million tonnes and 1.47 million tonnes in 2001-02 to 3.2 million tonnes and 4.5 million tonnes in 2018-19 respectively.

Non-Crop Agriculture: From a growth perspective, the non-crop agricultural sectors performed better than the crop sector during the 6th and 7th Five Year Plan (2011-20). In 2013-14, the growth rate for fisheries, forestry, livestock and crop subsectors were 6.19%, 5.05%, 2.83% and 1.91% respectively. Livestock contributes to food and nutritional security, income generation, and forms an

important livelihood base for millions of resource-poor livestock keepers in Bangladesh. Bangladesh also exports livestock-related products, including live animals, raw hides and skin, processed leather and leather goods, gelatin, etc. Within the non-crop sector, the share of the livestock sub-sector has increased relative to crop, fisheries and forestry. During the same period the production of meat and eggs also sharply increased. Furthermore, about 20% of the population is directly and 50% of the population is indirectly employed in the livestock sector. Livestock may contribute to food security through increased output of livestock products and the creation of employment and income generation that may assure access to food.

During the period 2001to 2018 total fisheries production in Bangladesh nearly doubled from about 20 lakh MT to 40 lakh MT. The share of inland culture fisheries to the country's total fish production sharply increased to 60%, driven by the surge in inland capture fisheries. There has been an increasing trend in brackish water shrimp and golda production which could be further enhanced through the use of intensive improved technology. Around 70 to 80% of the shrimps produced are exported each year. Marine fisheries have provided livelihood to about 0.51 million fishermen folk.

Growth in food processing industry has been a positive development: The growth of non-crop agriculture has been supported by increased private investments in the food processing industry. The size of food processing sector is worth USD 2.2 billion and grew on an average at 7.7 percent per annum between FY2005 and FY2015. The food processing sector is thus growing rapidly with prospects for continued growth as Bangladesh's GDP continues to grow. Bangladesh exports over USD 700 million worth of processed food and beverages, of which over 60 percent are shrimps and fish products.

6.3 Current and Future Challenges for Crop Agriculture

In spite of the very robust developments in the agriculture sector, both crop and non-crop agriculture, there are serious challenges. Some of the challenges are linked to ushering in new technologies including seeds, sound soil health, adequate and sustainable availability of water, farm mechanization etc. compounded further by future climate change related threats; as well as the growing industrialization with concomitant decline in land for agriculture, and other issues like access to credit, and scope for increased commercialization.

While there has been shift to high valued non-rice crops, as discussed above, but it will be difficult to sustain the growth of production of these high-value and labour-intensive crops unless investment is made in areas like, for example, the post-harvest management (a 10% reduction of post-harvest loss would add 10% additional food for the nation), processing and storage to stagger marketing of the crops throughout the year to match the demand that remains stable across the season. In addition, the challenge for striving to UMIC status by 2031 will be to exploit international markets with investment in areas like packaging, Sanitary and Phytosanitary Standards (SPS), and Good Agricultural Practices (GAP).

Specific challenges that have been lingering need changes in practice. The challenges that the agricultural sector in Bangladesh has had to face during this progress over the decades are many in number. Some of them include: (i) degradation of natural resources; (ii) scarcity of surface water

for irrigation; (iii) decline in the level of groundwater; (iv) pollution due to the presence of arsenic in water; (v) drainage congestion; (vi) water logging; (vii) low efficiency in the use of water; (viii) low productivity; (ix) degradation of forest resources in the protected areas; (x) climate change; (xi) constraints in the supply of inputs; (xii) inadequate availability of quality seeds to the farmers; (xiii) constraints on extension of agriculture and veterinary services; (xiv) high post-harvest losses; (xv) constraints of access to markets and value chains – including inadequate market infrastructures and poor transportation facilities; (xvi) inadequate agro-processing and value addition; (xvii) inadequate capacity of the stakeholders in the supply chain on issues related to food safety; (xviii) lack of easy credit to smallholders and market intermediaries; (xix) constraints on the availability of labour for agriculture; (xx) constraints on mechanization of farming; (xxi) low productivity of forestry; and (xii) malnutrition and other vulnerabilities related to food insecurity. While each of these will have to be addressed to ensure sustainable agriculture, some critical ones are discussed below.

6.3.1 Degradation of Natural Resources and Depleting Land Available for Agriculture:

Degradation of land and water resources increasingly has the potential to threaten national and household food security in Bangladesh in future. The growing population of Bangladesh places stress on decreasing agricultural lands and a waning supply of natural resources. Major concerns related to degradation include loss of water for agriculture and reallocation to cities and industries, infrastructure needs, thus reducing land quality in many different ways. Cropped land is declining at a rate of about 1% per year. In addition, regular degradation is occurring due to soil erosion, river erosion, and soil fertility decline, depletion of soil organic matter, waterlogging, soil salinity, pan formation, acidification and deforestation.

With the growing population demand for food will continue to increase though there will be relative changes in the composition of food consumption basket as we move up the income ladder. However, degradation of land and natural resources has the potential to reduce food supplies, lower agricultural income, increase costs to farmers and consumers, and deterioration of water catchment functions. So, the issue will not only be to stop/slow down the depletion of natural resources but also make optimum use of land so that more agricultural products can be produced on lesser available land.

6.3.2Scarcity of Surface Water for Irrigation and Decline in the Level of the Groundwater

Expansion of surface water irrigation by Low-Lift Pumps (LLPs) has stagnated in recent years, largely due to reduction of trans-boundary stream flows, shrinkage of wetlands and siltation of river resulting reduction of base flow to the river and increased salinity. As the lowest riparian of all the 57 transboundary rivers, Bangladesh carries huge sediment load through its river system. According to BDP2100, it is ranging to the tune of 1.0 to 1.4 billion tonnes per year. This resulted in a serious deadlock in the available flow during the dry season. However, the demand for irrigation water will continue to rise, and in the absence of well-managed surface water, there will be continued pressure in using groundwater with its adverse impacts.

One area ripe for improvement will be irrigation, where precision irrigation using digital technology could be used. Currently, the efficiency of water irrigation systems is low. The challenge will be to have in place sound water management systems that not only help preserve surface water through rainwater harvesting, building of reservoirs to hold such water, and also reducing the wastage of

irrigation water that is quite rampant. Use of ICT along with digital solutions to irrigation water management could be one of the ways of mitigating this challenge and also achieving sustainable water availability for irrigation in the coming decades.

Surface irrigation in use on irrigated farmland is the primary source of misuse of available water. 21% of the area is irrigated from surface water, while the rest of the area (79%) is irrigated from groundwater. Drip irrigation systems, which apply water directly to plant roots through low-pressure piping, are a less wasteful option, but they typically require a lot of maintenance and are more expensive. So there needs to be policies that could incentivize innovations in drip irrigation. There are now technologically advanced systems, which get linked to the Internet via the cloud and are automated, driven by sensors that determine the appropriate amount of water needed at specific crop sites. Crops other than rice should be irrigated up to field capacity level. Water requirement of crops and irrigation scheduling will properly be addressed in order to increase water use efficiency and decrease the loss of precious water resources in future.

6.3.3 Market Access and Value Chain Constraints

Rising incomes, rapid urbanization, more liberalized trade and advancing technology that can be expected with sustained high growth levels for Bangladesh to be a HIC by 2041 will also be driving up the demand for high-value, fresh and processed safe agricultural products. While some of it will in all likelihood be met through increased imports in a more liberalized trading environment, the big part of this increased higher value agricultural will also have to be produced, processed, packaged, scientifically warehoused, transported and marketed.

6.3.4 Inadequate Investments in Agro-Processing Value Chains

The possibility of processing agricultural products to increase their value signifies a sizeable potential for the development of the agricultural sector in Bangladesh. Processing of perishable products can also play an important role in reducing the amount of wastage. Adequate focus on the agro-processing sector to strengthen the links between agriculture and industry will be of critical importance in the coming decades. Although there has been a significant expansion of agro-processing industries, there is still a gap between requirement and supply, and more policy, regulatory, and institutional support will be needed befitting the aspirations of UMIC and HIC, that remove any policy, institutional, legal/regulatory bottlenecks that could give signal to entrepreneurs to increase investments in different segments of the value chain, including supply of knowledge of new agro-technology to help produce according to market needs maintaining the quality and safety for achieving national and international standards/norms. Besides providing the policy, legal/regulatory, and institutional support, the government may provide with feasibility and other infrastructure support under its SEZ Act which could help develop agro-processing zones in different regions with initiatives from the government.

6.3.5 Market Infrastructure and Poor Transportation Facilities

A smoothly functioning market that facilitates competition can be conducive to support healthy growth of the agriculture value chain. The performance of marketing is often hampered by poor transports and inadequate market infrastructure, pushing up transaction cost and price volatility. Improved market infrastructure can reduce the cost of food and uncertainty of supply and improving

the food security of poor and non-poor households. Although there has been a substantial expansion of road communication over the past years, existing roads, railways and waterways, particularly in rural areas, are insufficient which pose a negative impact on the growth of perishable high-value products. Besides the road network, attention should be given to improve waterways by re-excavation of rivers and canals. The rail transport facilities fall far short of requirement and need to be expanded and improved for transporting agricultural products at a cheaper rate. The following measures will be undertaken over the long-term:

- Rules and regulations will be enacted to ensure that farmers are getting real benefits for their sweat-toiling agricultural products.
- Price of agricultural products at the farm level will be maintained in such a way that the farmers get fair prices.
- The Road Users Cost (RUC) will be maintained at minimum as possible by maintaining the rural roads and road infrastructures to keep the transportation cost of farm product at affordable level.
- Support expansion of M4P/M4C (Market for Char) approach to national private business networks in chars and other hard to reach areas.
- Support innovation for the growth of local enterprise and integration/inclusion of these local enterprises with regional and national value chains.
- Facilitate public investment in related infrastructure through capitalization, anchoring and influencing.

6.3.6 Lack of Easy Credit to Small Farmers and Other Market Intermediaries

Credit plays an important role in the development of agriculture and it is believed that expansion of credit programs will have beneficial effects on agricultural production and income of small farmers and traders. It is also a key to the alleviation of poverty, diversification of livelihood and increasing the business skills of small farmers and traders. Research has shown a positive relationship between institutional credit and agricultural production and therefore an expansion in the disbursement of agricultural credit, particularly to small farmers, is a priority. Studies also found that timely sanctions and hassle-free advances are more preferred by the farmers than lower interest rates. Although about Tk.163 billion worth of credit was disbursed to the farmers through different banks in FY2019, according to Bangladesh Bank no credit was disbursed to the poor traders in the supply chain of agricultural products. Therefore, it is a challenge for the government to extend timelier and hassle-free credits to the poor farmers as well as small traders in the supply chain.

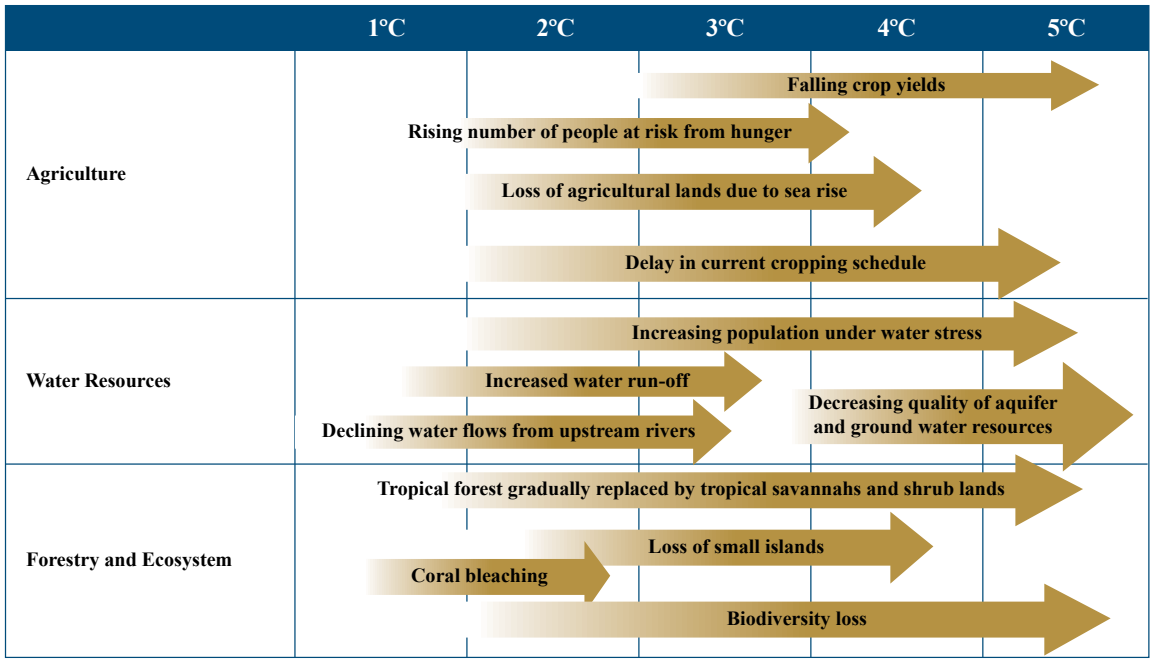
6.3.7 Climate Change Impacts

Bangladesh is currently ranked as one of the most climate-vulnerable country in the world. Some of the adverse impacts of climate change that the Bangladesh agriculture likely to face in the next decades are increasing trend in flood, drought, intrusion of saline water, drying up of wetlands due to decrease of upstream flow and intensification of irrigation, resulting in severe degradation of ecosystems during the dry season. The locations most threatened by climate change and natural disasters are charlands, coastal areas, Haor areas, flood plain and drought zones of Bangladesh.

There is growing evidence that climate change will become a major threat to Bangladesh's aspirations to ensure food security, sustainable development and poverty eradication. Agriculture, including crops and horticulture, forestry, livestock and fisheries, is the most climate-sensitive sector which must, therefore, adapt to the impacts of climate change to improve the resilience of food production systems in order to feed a growing population. Since water is critical to agriculture, managing our water resources and addressing the vagaries of climate change will have to be co-integrated national strategies. That remains a major long-term challenge of Bangladesh agriculture and has been addressed as an integral part of the overall development agenda under the Government's Delta Plan 2100.

In the moderate scenario posited by the Inter-Governmental Panel for Climate Change (IPCC), global temperatures are expected to rise by 2°C by 2050 and another 3-4°C by the end of this century (Figure 6.3). Even under the moderate scenario, the Bangladesh Delta, and particularly its agriculture, faces severe challenges of falling crop yields, loss of agricultural land, decreasing quality of aquifer, loss of biodiversity, and extreme weather events, the combined effects of which could seriously threaten livelihoods of people dependent on agriculture and related occupations.

Figure 6.3: Regional Temperature Change (Relative to 1900)



Source: The Stern Review 2007

6.4 Progress in Food Security

The success achieved in agricultural production has substantially reduced risks related to food security, but serious challenges remain as Bangladesh tries to reach its goal of achieving HIC status by 2041. Food security is a broad concept. It centers on two main factors – the availability of food and its affordability. Increases in the production of food are not of much use if it is not distributed to the population adequately. Moreover, there are also issues related to whether people can afford the food in the right quantity and quality. It is important to look at since Bangladesh still has issues

with malnourishment. This means that all though the people are getting more to eat, many segments of the population are not getting the right types of food in the required quantity while nearly one-third of food is lost as wastage. The traditional food wastages habit need to be changed through motivational work. The acceleration in economic and agricultural growth has made a positive impact on the diversity of food intake away from the rice dominant diet. Over the period, the per capita consumption of carbohydrates in the form of rice and wheat has been declining, while the consumption of vegetables, fruits and fish and meat has been growing.

Food consumption in Bangladesh has diversified over time. Cereals still provide a major part of the calorie intake, but their share in total calorie consumption has decreased from 92% in 1990 to 89% by 2010. Projections show that it will further decrease to 87% by 2031 and 86% by 2050. The contribution to calorie intake from potatoes, vegetables, animals and fish products gradually increased between 1990 and 2010 and will continue to increase up to 2031 and 2041. The consumption of animal products (meat, milk, eggs and fishes) and non-cereals (potatoes, vegetables and fruits) followed a similar increasing trend from 1990 to 2031. Absolute demand for animal products increased from 52.5 kcal/person/day in 1990 to 83.5 kcal/person/day in 2010 and will further increase to 92.8 kcal/person/day in 2031 and to 112.7 kcal/person/day in 2050. Projections of demand and supply of food until 2041 is presented in Table 6.1.

Table 6.1: Projections of Demand and Supply of Food by 2031 and 2041

Year	Rice	Wheat	Maize	Potato	Pulses	Vegetable	Fruits	Meat	Egg*	Milk	Freshwater Fish
Food Demand (Million MT)											
2031	38.8	6.66	5.68	6.67	2.26	17.7	12.57	10.93	32934	19.67	6.37
2041	42.0	7.07	6.27	7.22	2.4	18.57	12.86	11.63	46488	24.47	8.33
Food Supply (Million MT)											
2031	40.7	1.4	4.55	10.98	1.14	17.67	12.02	11.00	33000	20	6.5
2041	44.1	1.46	5.02	11.59	1.212	18.53	12.28	12.00	46500	30	8.5
Surplus (+)/deficit (-)											
2031	1.9	-5.26	-1.13	4.32	-1.12	-0.03	0.55	0.07	57	0.33	0.113
2041	2.1	-5.61	-1.25	4.37	-1.19	-0.04	-0.58	0.37	12	5.33	0.167

Source: Ministry of Agriculture and Ministry of Fisheries and Livestock *Egg in million

The recent inflation in the prices of food around the world illustrates the critical importance of ensuring food security for many poor people of the country. Past progress in the production of rice suggests that while Bangladesh could have the capacity to achieve food security through raising domestic production, this alone will not be enough in future. The emphasis on improvements in productivity will be particularly helpful in reconciling objectives of food security with the incentives of the farmers. In the case of food production, climate change adaptation strategy in the agriculture sector needs to be prioritized to address the global food insecurity susceptibility due to climate change. Moreover, efforts should be taken to minimize the post-harvest loss and habitual wastages of valuable foods by rich people. Six strategic approaches are called for: (a) Bringing unfavourable agri-ecosystem under productive sustainable agricultural practices; (b) Intensification of crop cultivation in productive agricultural land maintaining sustainability of soil health; (c) Sustainably Intensifying Agricultural Production Systems without bringing new land under cultivation; (d)

Increasing Resilience of crop and livestock production systems in the face of climate change; (e) Diversification in agricultural output and livelihoods involving more plant species or varieties, or animal breeds, off-farm activities and employment; and (f) Coping with Uncertainty in Developing Responses due to uncertainty about the scale and eventual nature of adaptation needed to address climate change.

6.4.1 Lower Poverty Levels Have Made Improvement in the Food Security Situation

The government's commitment to social protection and safety-net programs has led to a sustained decline in poverty. Since 2010, 9 million people have been lifted out of extreme poverty. This development helped to achieve the poverty reduction target of MDG by 2015. The decline in poverty has been accompanied by an overall improvement of people's purchasing power, which strengthened their ability to access basic food items. The drop in poverty rates has arguably been the most powerful driver as it allowed more people to access and afford better diets. The major achievements which contributed towards greater access to food are: (i) per capita income has been increased more than two folds in the last 10 years; (ii) employment generation has increased through public and private sector programmes; and (iii) the number of extreme poor reduced from 44 million in 2000 to 17.6 million in 2019.

6.4.2 Despite Progress, Concerns Still Remain on Food Security and Malnutrition – the Need for Having an Effective Social Safety Net

Although Bangladesh has made significant progress in reducing malnutrition for the children, approximately 9 million children between six months and five years of age still suffer from malnutrition, with 41 percent of children stunted, 36 percent of children underweight, and 16 percent wasted. Malnutrition is also severe in the country – more than 90 percent of rural Bangladeshis are not getting enough Vitamin A and have deficiencies of iron. The nutritional status of women, however, shows a better trend.

At the same time, almost 30 percent of the households do not own any land and another 30 percent own only up to half an acre. Such tiny landownership is insufficient to meet the food needs of four to five-member households. A large proportion of marginal farmers go to the market to access food, as their own production is inadequate to meet the household needs. Given the vulnerability of a large part of the population due to natural disasters it will be important to strengthen the social safety net program, going hand in hand with the development of the agriculture sector.

6.4.3 Agriculture Sector Priorities for the Future

Creating Opportunities for Sustainable Agriculture and Green Growth: In 2015, governments around the world conveyed their support for sustainable agriculture by providing unanimous backing for the UN's 17 Sustainable Development Goals (SDGs). The SDG to end hunger specifically focuses on promoting sustainable agriculture. And one of the goal's targets for 2030 is to have full implementation of sustainable food production systems and resilient practices that double the agricultural productivity and incomes of small-scale food producers while maintaining the genetic diversity of seeds, cultivated plants, and farmed and domesticated animals. Sustainable agriculture will be built on current agricultural achievement adopting a sophisticated approach that can maintain high yields and farm profits without undermining the resource conservation on which agricultural

system depends. Sustainable agriculture will be planned and implemented in such a way that it will be resource-conserving, socially supportive, commercially competitive and environmentally sound.

Crop Zoning and Land Use Planning and Promotion of Precision Agriculture: Considering the increasing demand for food production, it is an essential task to promote optimum land use and its conservation. There has to be an emphasis on soil and water conservation, land development, drainage and flood control, and reclamation program. Production program will have to be organized based on crop zoning, with a move to adopt precision agriculture practices wherever possible. Precision agriculture could help ensure optimization of inputs use and maximization of returns while preserving resources and reducing environmental risks. Land levelling with laser equipment, conservation and minimum tillage ploughing, buried pipe irrigation, drip & sprinkler irrigation, hydroponic culture of vegetables, bed planting, floating agriculture, organic farming, use of Urea Super Granule (USG), IPNS, and IPM are some of the examples of precision agriculture. This will save inputs, increase yield and profitability, and improve environmental management.

Agricultural Inputs- Seeds and Fertilizers: Besides BADC, under the current seed policy emphasis has also been given to have private sector involvement in research and development of hybrid and HYV seed. In order to achieve sustainable agriculture, relevant institutions will have to be further strengthened in order to ensure production of quality seeds/quality planting material at all stages of its production- breeder, foundation and certified seed and encouraged farmer to produce quality seed and farmer to farmer seed exchange. Seed production activities through biotechnology will have to be expanded. Emphasis will have to be given on creating facilities and infrastructure support for hybrid seed production, marketing and development. Farmers training and technical assistance and necessary extension services have to continue to extend improved methods of seed production, testing and storage.

Fertilizer is one of the critical inputs required for increasing crop production. The expansion of modern agricultural practices together with intensified cultivation will lead to increased demand for fertilizers. It will, therefore, be necessary to ensure timely supply of fertilizers to meet the increasing demand. To achieve a higher yield of crops and maintenance of soil health for sustainable agriculture, integrated plant nutrition system (IPNS) of fertilizer management should be followed. Emphasis/support will be given for the production of bio-fertilizers and facilitating their increased use. Rebalancing of fertilizer subsidy for encouraging balanced use of fertilizers has given some results. It is, therefore, important to adopt a pragmatic measure to encourage farmers using balanced fertilizers to maintain soil fertility.

Promoting agricultural diversification and expansion of Horticultural Crops: Agricultural diversification will allow shifting from cereal-cereal cropping patterns to cereal and non-cereal based high value cropping patterns with value-added product, including the expansion of horticultural, pulse and oilseed crops. In promoting agricultural diversification, the important consideration will be to support small and marginal farmers. Policy support will have to be provided to small and marginal farmers in selling their surplus products at remunerative prices by linking them with domestic and international markets. Agricultural diversification will also be achieved by further development of jute, cotton, sugarcane, quality tea production for local consumption and exports as well as that of

aromatic rice and commercial flower cultivation, their marketing, and development of associated value chains.

Use of Water Resources and Water Economy: Water is a very essential input for increasing crop production and sustainable agriculture. Due to climate change and lifting groundwater in an unplanned way, a significant portion of the country is not getting irrigation water during the dry season. Therefore, a well-planned irrigation management system is essential for a gradual increase of cropping intensity as well as yield. Irrigation efficiency will be ascertained and modern water management technology will be promoted to enhance irrigation efficacy and water productivity through optimal use of available water resources. As part of the strategy water reservoir/rainwater harvesting in rainfed/coastal/hilly areas will have to be encouraged, and small scale water resources systems could be developed (particularly through LGED/WDB/BMDC/BMDA) along with monitoring the maintenance of the small scale water resources infrastructure at local levels by water management groups/cooperative associationsand taking care of environmental and social issues.

Introduction and Popularization of Good Agricultural Practices (GAP): Protocol development for Good Agricultural Practices (GAP) suitable for Bangladesh agro-ecological and socio-economic conditions should be the major priority as required under the new Agricultural Policy. New Agriculture Policy of GOB also calls for development and implementation of such protocols, i.e. codes, standards and regulations for the fulfilment of trade and food safety and quality requirements. There are four pillars of GAP: economic viability, environmental sustainability, social acceptability and food safety and quality. Research and extension will put effort jointly to promote the process.

Farm Mechanization: Bangladesh has ample opportunity in mechanizing agriculture and increasing productivity. Use of farm tools and machinery improves work efficiency and resource use efficiency; helps intensify crop production and transform to commercial agriculture; enhances productivity and profitability of land, labour and inputs. Use of machinery reduces harvest and post-harvest losses, production costs, and drudgery of farmworkers; ensures timely operation, faster speed, higher precision and quality produce. Mechanization creates employment opportunities; provide dignity to the agriculture profession and better livelihood, and increases gross income. Moreover, animal draft power is drastically reduced on the farm due to high maintenance cost, shortage of feeds/fodders, and lack of grazing fields. Rural people have been migrating to urban areas for employment and better amenities; this will continue to cause a shortage of agricultural labour on the farm. With mechanization, there will also be a higher need for energy supply. The energy supply linked to farm mechanization including irrigation will be more from renewable energy sources, particularly solar energy. The Government will, of course, have to play its pro-active role in popularizing the use of selected demand-led agricultural tools and machinery and facilitating the use of renewable energy including solar power in agriculture production.

Post-Harvest Management: Development of agro-processing facilities can prevent postharvest losses and enhance farmers' income. The agro-processing industries are at present in their nascent stage of development. Most of the technologies and facilities for handling, storage, processing and packaging of farm products and by-products are substandard and outdated as they cater primarily to the domestic market. There exists considerable underutilization of capacity as well. Technologies

are already increasingly becoming available for the development and growth of agro-processing industries in the country. There needs to be in place supporting policies and regulatory environment to facilitate higher levels of private sector investments with incentives to use technological innovations.

Value Chain Development: Value chain development for identifying constraints to marketing supply channel is a new tool for rationalizing prices of agricultural produce between farm gate and consumer. A sustainably developed value chain will depend on the active participation of the private sector in all its phases. Strengthening the institutional capacity and reducing financial and regulatory constraints to address the complex production and marketing constraints including developing a viable private sector-led value chain will have to be pursued. For Value Chain Development of agro-commodities, cool chain management throughout the supply chain is to be ensured through developing a public-private business model. Long distant packaging materials like plastic crates, corrugated fiberboard packaging, minimally processed products development technologies is to be popularized through training and demonstration.

Agricultural Credit needs to flow smoothly: Lack of access to credit has plagued poor farmers and rural dwellers for many years. Inadequate capital of farmers' own and limited institutional credit hinders the production of rural poor seriously. Rural people need credit to allow investment in their farms and small agro-business practically agricultural inputs to smooth consumption and to reduce their vulnerability to weather and economic shocks. Because they have little access to the formal financing institution, they mostly rely on costly informal credit source. Microfinance institutions have always been at the forefront in providing agriculture credit. This needs to be strengthened and made amenable to the market needs of supply and demand for agriculture credit.

Agricultural Research: The main objective of research organizations is to generate demand-led technology (varieties and management practices) and information; and also scaling-up the developed technologies including validation trials. This has to be strengthened and adequately funded to address the problem areas (like hills, coastal, haor and barind areas) that are more prone to weather vagaries and that have proportionately higher populations of poor and vulnerable people. The research efforts should help develop and refine technologies that will bridge yield gaps and promote diversification, sustainable natural resources management: rainwater and river water harvesting for agricultural production, disease and pest management, integrated nutrient management for quality yield of crops, development of varieties/species with post-harvest technology of high-value agricultural commodities, mechanization, etc. It will also address climate change adaptation and mitigation strategies to develop climate-smart technologies for sustainable agriculture and environment. Research in private firms will be encouraged.

6.5 Agricultural Extension

Transfer of technologies and diversification and intensification of crop production program through appropriate extension services are of crucial importance. The extension services must be able to render required technical advice and management support at the appropriate time and place. The research-extension-farmers linkage should be strengthened further for smooth dissemination and adoption of new technologies. Marketing extension services have to be improved emphasizing post-harvest management of agricultural produces.

6.6 Future Agriculture Policies for Sustaining Food Security and Nutrition

Notwithstanding past progress and ongoing measures, several additional initiatives are necessary to cope with the growing risk of climate change for agriculture, food security, and nutrition. Four strategic approaches are associated with addressing climate change impacts in agriculture:

6.6.1 Sustainably Intensifying Agricultural Production Systems

A key defining principle for agricultural technologies and innovations to support food and nutrition security, as well as poverty reduction, is the need for sustainable agricultural intensification that could take on several approaches, including:

- Continued increase in food output will be needed in the coming years as populations grow and diets change.
- Increased production will need to be achieved mostly without bringing new land into agriculture (productivity increase).
- Increasing the stability of agricultural production systems requires much greater attention to building ecosystem services that increase resilience.
- Improving the efficiency of agricultural production systems, increasing sequestration, and reducing wastes will generate higher and more stable returns from farming investments.
- If yields are to increase sustainably, one needs to harness and develop the knowledge and insights gained from all current systems of agricultural production, including those based on organic principles, local indigenous knowledge, and innovative plant-breeding technologies.
- Growing practices of crop cultivation in unfavourable eco-system like inundated/deeply flooded land, haor, charland, hill, barind and coastal areas are in real need.
- Farmer friendly agricultural policy formulation & implementation
- Fallow land turned into cultivation through the expansion of efficient management;
- Enhancing farm production through incentives and rehabilitation.
- Doubling productivity per unit labour and doubling income of the smallholder farmers.
- Encourage commercial agricultural practices for small holder agriculturists.
- Articulating Farmers' welfare mechanism including improving nutrition and reduce occupational health hazards.
- Strengthening of agricultural research institute will be given the highest priority.

6.6.2 Increasing Resilience of Agricultural Production Systems

The overall efficiency and resilience of crop and livestock production systems in the face of climate change can be enhanced through improving various components as follows:

- Appropriate soil and nutrient management, through composting manure and crop residues, more precise matching of nutrients with plant needs, controlled-release and deep-placement technologies, can increase yields and resilience of crops, while reducing the need for often costly and inaccessible synthetic fertilizers (with the co-benefit of reducing the GHG emissions associated with their use)

- Improving water harvesting and retention (through the use of pools, dams, pits, retaining ridges, increasing soil organic matter to heighten the water retention capacity of soils) and water-use efficiency (irrigation systems).
- There are considerable gaps in knowledge of systems interactions in relation to weeds, pests, and diseases, and increased understanding will lead to better ways to manage them in a changing climate.
- Conservation agriculture with reduced tillage and residue retention, alternate wetting and drying method for water-saving.

6.6.3 Diversification in agricultural output and livelihoods

Agricultural diversification occurs when more species, plant varieties, or animal breeds are added to a given farm or farming community. It includes landscape diversification-different crops and cropping systems interspersed in space and time. Livelihood diversification implies that farming households are involved in different (nonagricultural) activities, for instance, by taking up a job in the city, setting up a shop, or starting to process farm products. Diversification is an important element of climate change adaptation. Diversification can potentially reduce the impact of weather events on income, and it can also provide farmers with a broader range of options to address future change. Given the potential benefits, diversification is often recommended as a risk management strategy.

The following priority strategies have been identified for aquaculture development:

- Fish health management strategy, Aquaculture policy, Marine fisheries policy need to be adopted and implemented for sustaining food security and nutrition.
- Aquaculture intensification and species diversification need to be promoted.
- Farm mechanization and vertical expansion of aquaculture should be the major priority for sustaining and diversifying of aquaculture production.
- Collaborative efforts need to be taken for exploring blue economy-related activities concerning the fisheries sector.
- Subsistence level aquaculture and fisheries interventions contributing significantly to uphold the nutritional status of the poor households. In this context, aquaculture-based farming activities may be expanded to ensure the required nutrition.
- Private sector investment should be attracted for fish and fisheries product value chain.
- Motivational activities for farmers/entrepreneurs should be taken to adopt advanced farming technologies.
- Developed skilled/trained manpower to operate modern laboratory as well as processing plants.
- Introduction of adaptive aquaculture technologies and fisheries management system for the poor fish farmer/fisher of coastal region through training and farm demonstration.
- As the fishers dependent on aquatic environment are highly vulnerable to the effect of climate change, so special importance/consideration should be given to their livelihoods.
- Collaboration and coordination among ministries, department and agencies should be strengthened.

6.6.4 Coping with Uncertainty in Developing Responses

due to considerable uncertainty about the scale and eventual nature of adaptation needed to address climate change. Adaptations to climate change can be thought of as incremental changes to existing systems or more systemic changes that bring new components to (or remove old components from) systems, often with the goal of increasing diversification and hedging against new, unknown risks. Transformational change in agriculture is not new: the planting of biofuel crops instead of food crops, the replacement of subsistence-based agriculture with modern, science-based commercial agriculture, or migration in the face of extreme drought being a few examples among many. Therefore, an Adaptive Delta Management approach has been adopted in BDP 2100 (section 12.2).

6.7 Agriculture and Rural Development of the Future

Agriculture and non-farm commercial activities are the principal sources of livelihood of the rural population. Rural development and agricultural modernization are intricately linked. Although Bangladesh has made significant economic progress during the last decade, there remains a huge gap between the urban and rural areas in respect of citizen's services and facilities. Phasing out of this rural-urban divide has to be a priority of future development. To bring that end the following initiatives will be undertaken:

A. My Village My Town: Ensuring urban facilities into the rural areas of Bangladesh:

- Climate resilient core road network development up-to every village supportive to accommodate high middle income economy will be given priority.
- The Local Government Division will take appropriate measures to prepare Upazila Master Plan and enact the plan through the LGIs so that the villages can transform into rural township in a proper, efficient and planned way restoring the ecosystem of the economy. LGD will also work for capacity building of LGIs so that they can enact and enforce the master plan at root level of the country.
- Availability of safe water will be a top priority in all villages with special attention to salinity prone coastal areas, arsenic prone areas, hilly, haor and char areas. There will be gradual increase of piped and mini piped water supply in densly populated villages throughout the country. At the same times, special effort will be given in sanitation and fecal sludge management for restoration of aquative environment of the rural areas.
- Effective Waste Management Model will be developed for Rural Growth Centres/Markets and as well as villages. Capacity of LGIs will be enhanced to deal with waste management at rural level.
- Local Government Engineering Department under Local Government Division will develop community spaces and recreation facilities in the villages under their 'My Village-My Town' programs.
- Rural infrastructure development with support services will be given high priority in order to create a positive environment for rural job creation;
- Agro-based small industries will be encouraged in rural areas and congenial atmosphere for business and commerce should be ensured to create employment opportunities for youths, especially higher educated ones who will be the human capital resources of the future;

- Training schemes for rural youths will be strengthened as per their education level, job prospect and family requirement,
- Improvement of rural law and order will be ensured,
- There will be programs to encourage and support small and medium entrepreneurship,
- Foreign and local investment in rural areas will be encouraged to create employment opportunities,
- Access to bank credit will be improved;
- Sound regulations will be introduced to restrict improper use of agricultural land,
- Digitalization of land records will be undertaken,
- Program of recovering lost government land, particularly khas land including already filled-in riverbank and canals;
- All villages will be connected with Upazila headquarters;
- Decentralization of fiscal and administrative powers would strengthen the Upazila in providing required services to the grassroots.
- At present, there are 2100 rural growth centers throughout the country. The number of growth centers was determined during 1990s. With a number of strategies to develop the growth centers and connecting them with better roads, the rural economy has experienced a significant lift. At the current pace and growth of the economy, it is imperative to increase the number of growth centers throughout the country and use them innovatively for employment creation and overall growth of the rural economy.

The above measures will make the foundation of each village stronger and more productive thus phasing out the rural-urban divide.

B. Improvement of the post-harvest management system and installation of Agro-based manufacturing industry in villages:

- Advice to develop cold storage facility into the rural areas individually or by co-operative system and linkage with relevant organizations.
- Agro-based manufacturing industries can be encouraged in rural areas, such as
  - Jam, jelly, juice, cheese, sauce, pickle, chips manufacturing industry.
  - Fishball, fish burger, fish pest, fish stick, and fish noodle etc. manufacturing industry.
  - Milk processing industry and encouraging cold-chains transportation.

C. Using vast sea resources to contribute to food security and food safety ensuring blue economy:

- Using seaweed to prepare cake, Jelly, soup, roll, salad, organic manure in the agriculture sector.
- Improvement of fish catching and manufacturing system in fresh and marine ecosystem.

6.8 Looking Ahead into the Future

Going forward, it is critical for policymakers to recognize that the future climate poses challenges outside historical experience. Adaptation and mitigation measures will have to be taken now to ensure sustainable agriculture and rural livelihoods. Building and improving adaptive capacity and taking technical and non-technical adaptation actions in key climate-sensitive sectors such as agriculture must be an urgent priority for Bangladesh. There is also the need for making strong efforts in taking adaptation actions in key related sectors including soil and water resources, forestry, coastal and marine resources.

In the agriculture sector, the priority is to strengthen local adaptive capacity by providing public goods and services, such as better climate information and weather forecasting, research and development on heat- resistant crop varieties and climate-smart techniques, early warning systems, and efficient irrigation systems; search for potential livestock species and fodder varieties, and explore innovative risk-sharing instruments such as index-based insurance schemes of commercial ventures.

In water resources, the priority is to scale up existing good practices of water conservation and management and apply more widely integrated water management, including flood control and prevention schemes, flood early warning systems, irrigation improvement, and demand-side management. Considering the interdependence of the components of water energy food (WEF) nexus, the perspective of 'water security' would be addressed along with food security and energy security.

In the forestry sector, the priority is to implement effective public-private partnerships for reforestation and afforestation.

In the coastal and marine resources sector, the priority is to implement integrated coastal zone management plans, including mangrove conservation and plantation. Furthermore, the development of value-added products, reduction of post-harvest loss of fish, sustainable management of open water fisheries and Maximum Economic Yield (MEY) of Marine fisheries will be part of the long-term strategies.

There is a huge demand for hygienic dry fish in the country and abroad. BFDC will take initiative to establish modern *shutki mohal* in different strategic locations of the country to produce hygienic dry fish. The shipbuilding industry in Bangladesh is getting a boost from the developments in the fisheries sector. A lot of fishing trawlers, barges, tugs and vessels are badly needed in docking/ undocking/building and repairing facilities. BFDC has already established dockyard at Chittagong Fish Harbors and Patharghata Fish Landing Centre. To enhance this facility another two-channel slipway has been recently constructed at Chittagong Fish Harbour. In order to expand the docking facility for fishing boat more dockyard will be established at different strategic locations in the coastal areas.

There exist "win-win" measures that address climate change and are also good sustainable development practices. The Government has a vital role to play in providing incentives and an effective policy framework for individuals and firms to adapt to climate change and to enhance their adaptive capacity.

There remains a need for enhancing policy and planning coordination across Ministries and different levels of government for climate change adaptation. There is also a need for adopting a more holistic approach to building the adaptive capacity of vulnerable groups and localities (e.g. in Coastal Zone Hotspot) in rural as well as urban areas to build their resilience to shocks, including developing their capability to diversify local economies, livelihoods, and coping strategies.

CHAPTER 7

INDUSTRIALIZATION EXPORT DIVERSIFICATION AND EMPLOYMENT GENERATION IN A FUTURISTIC WORLD ORDER

INDUSTRIALIZATION, EXPORT DIVERSIFICATION, AND EMPLOYMENT GENERATION IN A FUTURISTIC WORLD ORDER

7.1 Industry and Trade in the 21st century

7.1.1 Industrial Policy and Industrialization

When economic growth and its acceleration are at issue there exists a symbiotic relationship between trade and industrial policy. Since the 1980s a new development paradigm entered the development discourse – export-led growth. Bangladesh embraced this paradigm as a strategy of growth for the past three decades by switching to a trade policy regime that was outward-oriented (export-oriented) based on an approach of leveraging the international market for industrial growth, employment creation, and poverty reduction. Hence, industrial policy, in concert with trade policy, became part and parcel of this development strategy. Since future trade (i.e. exports and imports) is a function of the state of global demand for Bangladeshi products and supply of essential agricultural and manufacturing products (food and intermediate inputs) that enter the production and consumption system of Bangladesh, it is important to keep the global economic scenario as the backdrop of domestic policies directed towards boosting the manufacturing sector that is and will be the major driver of rapid growth and employment creation over the period of the Perspective Plan.

The broad goals of Bangladesh's industrial policy can be classified into two tracks: import-substituting industrial development and export-oriented industrialization. This creates the need for industrial policy to be in tandem with trade policy, as the two-track industrialization policy raises issues of complementarity as well as conflict in the articulation of incentives between the two strands of trade policy – import substitution and export promotion. As part of policy fundamentals, the two-pronged approach of import substituting and export-oriented industrialization brings to the fore the choice of two broad competing strategies: comparative-advantage-following (CAF) or comparative-advantage-defying (CAD). CAF industrial and trade policies are those that promote economic activities based on the country's comparative advantage (e.g. labor-intensive production) while CAD policies do not necessarily select activities with comparative advantage (e.g. promoting capital intensive import-substituting industries with heavy protection in a labor abundant economy). In articulating trade and industrial policies during the period of the Perspective Plan these two approaches will be kept in perspective.

A sound industrial policy should complement market forces, maximizing the potential for the industrial sector to contribute to economic growth and job creation. In practice, Bangladesh industrial policy has multiple objectives including employment creation, promoting structural change towards an industrial economy, enhancing technological capacity, improving regional distribution of industrial activity, promoting investment in laggard regions, and facilitating more even income distribution. While it might be tempting to cover wide ranging goals the Perspective Plan 2021-2041 acknowledges that prioritization is of critical importance as industrial policy to be effective must have limited and clearly defined objectives, simply because there are not sufficient policy instruments to address multiple objectives. Moreover, different objectives may be inconsistent with each other. Thus the

principal focus of our industrial policy during the Perspective Plan will be to achieve structural transformation where industry's share in GDP would reach 40% of GDP by 2031 and then gradually come down to 33-35% of GDP by 2041 thereby absorbing the bulk of the labor force that was hitherto under-employed in agriculture and informal services. Furthermore, to develop a globally competitive manufacturing sector the strategy would be to provide support to infant industries with time-bound and performance-based criteria. Strategic coordination between the state and businesses in formulation and implementation of industrial policy is the accepted practice in Bangladesh.

Finally, Bangladesh's industrial policy for the 21st century (post-LDC graduation) has to be comprehensive rather than target specific in order to be WTO-consistent. Policies for promoting industries to stimulate investment or export growth are then restricted to generic instead of specific policy instruments with some scope for transitional arrangements under Special and Differential treatment with *de minimis* provisions. Generic policies for promoting industrial development include policies related to infrastructure, human capital formation, innovation, and diffusion of technology which are critical for export competitiveness.

7.1.2 Trade patterns and structural change in the age of globalization

We are living in a world that is transforming at speeds almost incomprehensible to the average mind. The global economy provides two things. One is a huge market which is getting more integrated over time. Provided an economy has some competitive edge – and Bangladesh does - it can basically grow as fast as it can invest and build productive capacity. The second thing - even more important - is that the global economy provides knowledge, technology, know-how. Globalization coupled with the instantaneous transmission of digitized information results in acceleration and augmentation of the flow of knowledge, technology, and learning. According to Klaus Schwab, the founder and head of the World Economic Forum, the digital age will bring change "unlike anything humankind has experienced before." Properly harnessing these global forces will enable Bangladesh to grow at higher rates in future that were simply not possible before.

The transition from agriculture to manufacturing is still the path to higher productivity and rising living standards for Bangladesh – a structural transformation that is bound to continue and intensify over the next decades. In the future, this transition will come with intense pressures for innovation and securing industrial competitiveness, as manufacturing goods make up 70% of global trade. There is a clear consensus that Bangladesh's future growth and prosperity lies in outward-looking industrialization to create good jobs and income by exploiting our competitive advantage. That will require Bangladesh industrial and trade policies to evolve in tandem with global trends, and developments in industry and trade of the future. In particular, our policymakers will have to recognize that our competitive advantage today based on low-skilled and low-cost labour could be threatened by evolving technology and innovation in the 21st century.

Seizing on this global trend and banking on the current state of Bangladesh's development, the Perspective Plan 2021-41 provides a road map for transforming Bangladesh from a Lower Middle-Income Country (LMIC) to Upper Middle-Income Country (UMIC) by 2031 and then becoming a High-Income Country (HIC) in the 2040s. It is a Plan for one of the speediest transformations of a developing economy in history. The challenge is daunting but the potential exists if the nation could

embark on a dynamic path of sound political and economic governance for effectively harnessing its human energies and natural resources. Strategic trade integration with the world economy will be a salient pathway to future prosperity based on the nation's comparative advantage.

The fact is that trade and industry across the globe will undergo significant transformation by the 2040s, some of which are modestly predictable while others can only be surmised. Drawing from Bangladesh's own experience and from ideas articulated by global experts about the shape of things to come, this chapter will first describe a vision of industrial evolution and transformation over the course of the first half of the 21st century, followed by a similar assessment of the evolving global trade scenario.

For much of the next quarter-century, the bulk of job creation in Bangladesh will be taking place in a diversified manufacturing sector that is globally competitive, export-oriented, and focused on breaking into emerging markets while expanding its market share in developed economies of the world. A strategic approach is to recognize that trade and industrial policies are not mutually exclusive but self-reinforcing. Thus a program of industrialization and the appropriate trade policy stance are part of the same development strategy. Outward oriented trade policies consistent with export-oriented industrialization will be the guiding principles of a high growth strategy for the future. Recognizing that Bangladesh's future industrial prospects will be intricately linked to the projected trends in (a) global and regional trade, (b) the future of globalization, and (c) the evolution of trade policies determined by the transformation of manufacturing and services of the future, PP2041 develops an integrated trade and industrial strategy for future growth and job creation for Bangladesh building on the interplay of these three interlinked and strategic forces that can fuel economic growth and propel Bangladesh across the high-income threshold in the 2040s.

The state of globalization and contemporary global trends in the world economy has been aptly described by Arvind Subramanian and Martin Kessler of the Peterson Institute for International Economics, in Washington DC, who identified several important features that will have to be taken on board in formulating any long-term national perspective plan with a futuristic outlook:

1. Hyper-globalization and Universalization: a widespread embrace of globalization and the greatest openness to trade and investment in world economic history.
2. Mega-traders: the rise of China, India, and other emerging market economies.
3. De-materialization of trade: rising importance of services in global trade
4. Proliferation of regional and preferential trade agreements and the current discussion of megaregional ones.

Future of globalization. The world has been globalizing for centuries. But the past 25 years has experienced a rapid pace of globalization, at speeds not attained in the past – described as hyper-globalization. There is near consensus among global analysts that the next 25 years will experience a new wave of accelerated globalization driven by cross-border flow of technology, capital, and knowledge, within a global infrastructure characterized by the greatest trade openness to trade and investment.

Rise of China and India. The World Bank (Global Economic Prospects, 2007) projects that high-income countries will see their GDP doubled in the next 20 years while GDP in developing countries will more than triple, driven mainly by the impact on the global economy from expansions in China and India. Along the way, there will be many anticipated and unanticipated shocks to the global economic system which global leaders will have to cope with through better and more coordinated global economic governance. China is likely to remain the export powerhouse and mega-trader to contend with. Bangladesh policymakers will have to be conscious of these international developments as the economy will be far more integrated with the global economy than it is today.

Proliferation of RTAs/PTAs. In the past 25 years, it appears that the era of hyper-globalization has also been accompanied by a proliferation of RTAs/PTAs. Since 1990, the number of PTAs has risen to over 300, and roughly half the exports of the top 30 exporters go to RTA partners. The mega-regional in Bangladesh's backyard is the ASEAN+ which is moving up to become an economic community of East Asian countries (Regional Comprehensive Economic Partnership) with the original 10 economies (Indonesia, Malaysia, Singapore, Thailand, The Philippines, Brunei, Cambodia, Vietnam, Laos, Myanmar) joined by another five Pacific economies (China, Japan, Australia, New Zealand, S. Korea) and India. Bangladesh is behind in its regional initiatives being a member of only one FTA, SAFTA and needs to heighten its proactivity to tie up with other regional groups to access growing markets in the proximity of South Asia.

7.1.3 Notable Trends in Global Trade

Under the future scenarios of globalization, trade analysts (Oxford Economics and HSBC research reported in Global Trade Review 2015) have prognosticated on the major trends that will shape the future of trade. A striking conclusion of the report is that service-led industries will become dominant and businesses with explicit sustainability goals will succeed. That is, businesses will have to make sure supply chains are sustainable. The trade of services will be a dominant feature of future trade and the way we define world trade volumes will need to be changed as a result, such as accounting for trade in value-added services. This is because so much of the traded goods have ingrained service components in them. For example, only a percentage of the work that goes into a smartphone is hardware – an industrial product. A significant volume of services is provided with this product in terms of software updates which also need to be accounted for. Similarly, increasing export of healthcare and education services will emerge as significant components of trade volume in the future.

Briefly, Bangladesh will have to contend with six notable trends that will shape the future of trade:

- ***Trade liberalization will continue.*** The pace of trade liberalization will continue with the extension of free trade and the continuing harmonization of standards and regulations to reduce barriers to trade, fostering the rise of "mega-regionals". A more stable political and currency environment is anticipated, making trading easier for companies around the world.
- ***Trade facilitation will reduce cost and increase speed of trade.*** Trade will be boosted by improvements in logistics. The cost of shipping will fall, driven by a combination of larger vessels and the expansion of shipping lanes. New airports, with increased energy efficiency and further streamlining of border control processes, will speed up trade and

reduce air freight costs too. In addition, continued advances in transport technology and infrastructure will increase capacity, opening up new trade routes.

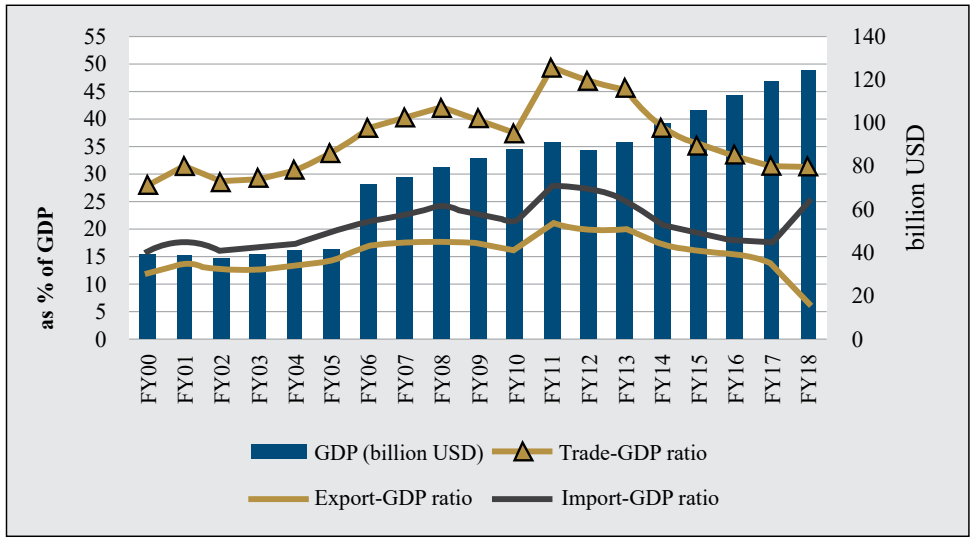
- ***Global value chains will evolve and consolidate.*** Bangladesh will have to make up for opportunities lost in integrating into global and regional value chains by courting FDI and joint ventures to develop and trade in a wide range of intermediate goods and services. This approach provides one more avenue for fostering the elusive export diversification.
- ***Digital innovation in industry and trade and the drive to sustainability:*** Digital innovation will continue to provide opportunities for businesses and individuals. New technologies create fresh products and business models that can be adapted for different markets, undermining the importance of location. Increasingly interconnected economies will bring rapid change and transmission of ideas around the world. The supply chain will need to innovate to respond to increasing expectation and demand for greater environmental sustainability.
- ***Mass customization:*** Factories of the future will be small and flexible rather than large and rigid and located close to the end customer (Factories of the Future 2020: European Factories of the Future Research Association (EFFRA)). With digitization products can be easily customized and sold in different markets, representing a shift from mass production to mass customization.
- ***Micro-multinationals will emerge and thrive.*** With digitization and tightly connected global networks, small and medium enterprises (SMEs) have an opportunity to level the competitive playing field against larger firms. New technologies such as 3D printing will enable smaller players to deliver customized products anywhere in the world. That portends a radical shift in economies of scale. This will give Bangladesh SMEs a fighting chance to compete in the global marketplace.
- ***Trade openness:*** Intensification of trade openness will be another critical factor in facilitating export success in an integrated world economy. Nobel Laureate economist Michael Spence, Chairman of the Commission on Growth and Development, argued that sustained high growth of economies in the post Second World War period has been achieved by leveraging the demand and resources of the world economy through trade. As developing and emerging economies strive to reach the level of developed and high-income countries, the sanguinary role of trade in their progress becomes all the more integral. Trade openness, therefore, is another lever of development that will have to be fully integrated with Bangladesh's growth process. That is to say, over the next 25 years, Bangladesh's progress to middle-income and high-income status will have to be largely driven by a high performing export sector that is competitive in a highly globalized world.

7.2 Trading in the New Era of Globalization

7.2.1 Bangladesh Export Performance and the trade regime

Progress in trade openness since the early 1990s clearly had a positive impact on superior export performance. The share of trade in GDP has been rising since 1990 when it was only at 19%.

Figure 7.1: Rising Share of Trade in GDP



Source: EPB, BB and BBS

As Figure 7.1 reveals, exports, imports, and overall merchandise trade has been rising to support the contention that Bangladesh has become a trading nation with its rising dependence on international trade for jobs and income. But progress in trade openness slowed down since the mid-1990s, leaving Bangladesh well behind the average trade-GDP ratio of Southeast Asia and Emerging Asia, but close to the average of South Asia. Table 7.1 represents the position of Bangladesh trade openness compared to South Asia, Southeast Asia, Emerging Asia and Low-income countries. Greater trade integration has yielded high growth and employment outcomes for East Asian countries. Bangladesh would be better served to go for similar levels of trade integration as a strategy for the future.

Table 7.1: Bangladesh: 2016 Trade Openness in Asia (Trade-GDP ratio)

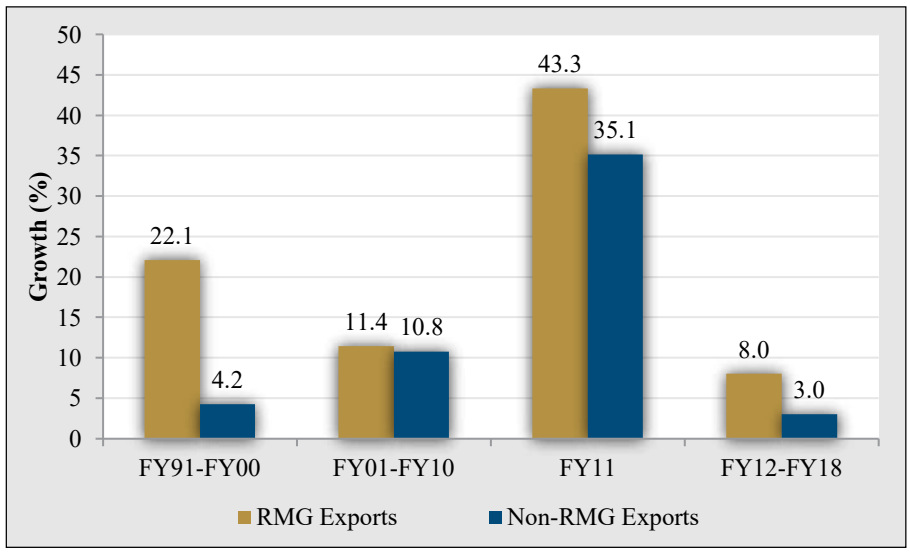
	Exports	Imports	Total
Bangladesh*	14.1	17.6	31.7
South Asia	11.5	16.9	28.4
Southeast Asia	44.7	42.2	86.9
Emerging Asia**	20.2	17.1	37.3
Low-income countries	12.7	27.8	40.5

**The data for Bangladesh is for FY2016-17 **This group consists of China, India, Indonesia, Malaysia, Thailand and Vietnam*

Source: WTO, WDI database of World Bank

The notable feature in this evolving trading pattern is the emergence of readymade garment exports and RMG industry as the leading sector of the economy. By 2015, Bangladesh became the second-largest single-country exporter of RMG in the world, after China. But the fact that RMG exports have been growing at an average annual rate faster than that of non-RMG exports (Figure 7.2), leads to a rising share of RMG in the export basket, resulting in further concentration of exports. This must be reversed. Export diversification thus becomes a challenge that must be addressed, (a) because over-reliance on a single export commodity makes the economy vulnerable to external shocks, and (b) a diverse export basket is a sine qua non of stable export revenue and its growth.

Figure 7.2: Growth of RMG Exports Exceeds that of Non-RMG Exports



Source: EPB

It then follows from the above that despite the impressive growth record, the export base and the export markets have remained rather narrow for Bangladesh, which is a matter of great concern. Undiversified exports both in terms of product range and markets are likely to be much more vulnerable to various shocks than well-diversified exports. Diversification of Bangladesh's export structure remains the primary challenge for the future. By broadening the export base, diversification can stabilize and expand export revenues, enhance value-added, and boost economic growth. There is a growing consensus in economic literature that countries achieving structural change in exports through increased export diversification also grew rapidly and inclusively. While the concerns relating to the trade regime is discussed below, it is important to emphasize that RMG success has itself highlighted the enormous skill gap that has emerged. The constraints to moving up the market in RMG and expansion of non-RMG exports (i.e. diversification) are intricately linked to the prevalent skill deficiencies in the overall manufacturing sector. Inadequate FDI inflows, which bring improved management, technology, and capital, is the other missing link in our pursuit of export diversification[6].

Trade regime and exports: There is strong international evidence that export performance, and its offshoot, progress in export diversification, is in large part the outcome of the trade policy regime governing export production and trade. Trade policy has to do with the incentive regime governing exports versus production for domestic sales. The key to an export-oriented development policy lies in a trade regime that favours exports over import substitute production. Where protection policy heavily subsidizes[7] import substitute production, export is discouraged. Bangladesh trade regime has to be tilted in favour of exports; and there is much work to do.

Evidence from Bangladesh over the past two decades provides confirmation to the proposition that trade openness has had a positive impact on export performance. But export diversification has

6 Vietnam's export success is driven by FDI which holds 60% share of manufacturing exports.
7 Protective tariffs are equivalent to subsidies on import substitute production.

stalled in the face of stellar success of RMG exports that only accentuated export concentration. As we saw earlier, a whole host of factors affect export performance, in addition to trade policy. In the case of RMG, many special factors played positive roles that are missing for other exporters.

The role of these various factors in explaining the growth of RMG exports illustrates their importance. The key factors and policies that explain the dynamism of RMG exports include the following.

- ***Multi Fibre Arrangement (MFA) 1974-2005:*** The MFA, an external but fortuitous development, provided the initial impetus. Faced with quota restrictions, Korean firm Daewoo entered into a partnership with Desh Garments of Bangladesh to produce garments in Bangladesh using the underused Bangladesh quota in the USA and Europe. The seeds of a dynamic industry were thus sown by improved market access to US and European markets. Soon drives of entrepreneurs started entering the profitable venture.
- ***Bonded Warehouse System:*** To provide world-priced inputs and support the nascent garment industry the Bangladesh government allowed duty-free access to imports for the RMG sector through the bonded warehouse system. This created a duty-free environment for the RMG sector even though the rest of the economy faced huge tariff and non-tariff barriers. This free trade regime for the RMG sector has been a leading factor for spurring the growth of RMG exports.
- ***Back-to-back Line of Credit (LC):*** The RMG sector was able to lower its cost of production by having a system of back-to-back LC by which inputs were procured against export orders. This saved the industry substantial working capital cost.
- ***Low-Cost Labor:*** Bangladesh being a labour surplus country, RMG investors were able to tap into this huge surplus labour. In particular, the RMG sector has relied on female labour that has low participation rates and as such has low reservation wages. Additionally, this labour is very reliable and disciplined. In more recent years, this access to low-cost labour relative to China, India, Sri Lanka and Vietnam has increased tremendously the prospects for expansion of the RMG sector as labour cost increases, particularly in China, making Bangladesh a much more attractive destination for RMG export production.
- ***Labor Training:*** RMG labour requires minimum training that could be easily provided in-house and homed in on the job.
- ***Technology:*** The initial technology transfer happened as Korean investors, armed with the knowhow of RMG production and trade, came to Bangladesh to take advantage of the quota allocated to Bangladesh. The technology being relatively simple was quickly adapted and transferred to other investors (local) through competitive buying of managers and trained labour.
- ***Infrastructure:*** Here policy progress has been limited, both in power and in transport. As for power, RMG producers have tended to adjust to the realities of power outages and rationing by having back-up generators. But this is potentially a factor that will hurt the future expansion of RMG unless actions are taken to improve infrastructure.
- ***Tax incentive:*** The government has taken a very liberal attitude towards taxation of earnings from RMG by having a very low effective tax rate on income from RMG exports.

Given the successful experience of RMG, a strategy of export diversification needs to simply take lessons out of this success. After all factors have been considered, evidence shows that Bangladesh leads the world in low-cost labour that is largely unskilled or semi-skilled. In essence, low wages appear to effectively compensate for low productivity, so that, in the ultimate analysis, garment exports from Bangladesh become costs competitive. The existing competitive advantage could be useful for the expansion of other for most labour-intensive industries. Footwear is among the rising star for much the same reason. In recent years, compared to early 2000s, there had been some products where Bangladesh gained a comparative advantage. These include edible fruits, animal and vegetable fats and oil, preparations of cereals, flour, starch or milk and pastry cooks' products, preparation of vegetable, fruits, nuts, residues from food industries, rubber and rubber products, copper and copper products, and furniture.

At least for the medium-term, low-cost labour will continue to be the source of competitiveness of Bangladesh exports in RMG as well as non-RMG products. However, policymakers and private entrepreneurs will have to look out for (and ready to adopt) the technological advances occurring in the global marketplace in the coming decades in order to ensure sustained competitive advantage in exports.

However, for the future, it would be a strategic mistake to cling to labour-intensive production. With the kind of rapid transformation taking place in global manufacturing today (and projected for the future), Bangladesh can ill afford to cling to the current factor-intensity (labour-intensive) of its exports. Like Korea, Taiwan, and Malaysia, it can be surmised that by 2031, if not earlier, Bangladesh will have to move towards technology-intensive exports and requisite investment in developing appropriate skills and logistics to ensure the future competitive advantage of Bangladeshi firms will have to begin now.

7.2.2 Addressing the Challenge of Export Diversification

How has Bangladesh faired in the quest for achieving a superior export performance with a diversified export basket that contains more of non-RMG products? Some are generic to the entire economy or the manufacturing sector, but some factors are specific to the export sector. Some others relate to the challenge of export diversification.

I. Challenges with trade infrastructure

Constraints under trade infrastructure cover factors that affect cost competitiveness, such as technology and labour productivity, enabling environment for trade, the state of trade logistics, ease of doing business, access to finance, and availability of skills. Most of these could be described as supply-side constraints behind-the-border, except for those arising from customs administration and port efficiency.

- ***Technology and labour productivity*** are obvious factors that influence cost competitiveness today, and the foreseeable future. Bangladesh, in general, is still weak on technology and its average labour productivity is low. These are two areas where Bangladesh needs to work much harder to improve its export competitiveness for the long-term. Bangladesh can learn valuable lessons from its own experience with RMG exports. In the case of RMG Bangladesh has an edge over its main competitors (China, India, Vietnam, Sri Lanka) in terms of both technology and labour productivity for a wide range of specific product

categories that has allowed Bangladesh to penetrate the export market and increase its market share. Bangladesh acquired the technology at the early stages of the evolution of the RMG industry through a strategic partnership between Desh Garments of Bangladesh and Daewoo of Korea. Subsequently, this technology got disseminated widely through the RMG network. A similar approach is needed in other export sectors like Footwear and Leather goods, toys, and electronics, by courting FDI and joint ventures with an eye on the future. The challenge of technology adoption and upgradation with a vision for the distant future is very real. And it is a steep climb for Bangladesh given its current state of technology in manufacturing and the forthcoming transformations vis-à-vis Industry 4.0 and beyond.

- ***The enabling environment for trade*** is a key determinant of cost competitiveness of exports. In recognition of its importance, considerable attention is now being paid by various countries to this factor. Globally, several indicators of this enabling environment have been prepared that are regularly updated on an annual basis to track progress relative to competitors. Export competitiveness is sharply reduced by the high transaction costs relative to competitors related to transport services as well as the inefficiencies of custom procedures. Turning this around will be a strategy for the immediate future.
- ***Infrastructure deficiencies:*** Bangladesh is behind other Asian comparators on infrastructure quality. In order for countries to be competitive in the arena of global trade and investments, the availability of quality infrastructure which is a key input, is very crucial. Energy constraint is no longer an issue but transport infrastructure is still a problem. Malfunctioning of the country's land and seaports have been obstacles for exporters. Sustained investments in infrastructure (estimated at $10 billion a year) over the next two decades can bring Bangladesh up to par with its comparators.
- ***Port services:*** The Chittagong port, which handles nearly 85 percent of the country's trade merchandise suffers from labour problems, poor management, and lack of equipment. Its container terminal handles only 100-105 lifts per berth a day, well below the UNCTAD productivity standard of 230 lifts a day. Ship turnaround time is 5-9 days, significantly above the 1-day standard of more efficient ports. Port modernization, upgradation, and establishment of deep seaports will have to be in Bangladesh's long-term agenda. Leveraging regional ports should be a viable option for the future.
- ***Road network:*** Poor road conditions and lack of transportation are especially constraining for enterprises in far-flung rural areas. Public spending on road maintenance is seen to fall short of what is required. One of the major transport corridors for international trade is the road connecting Dhaka and Chattogram. This road needs to be converted into an 8-lane highway along with all the trappings of modern traffic management.
- ***Railway system:*** The container unit train operation between Chattogram and Dhaka has the potential to provide an important benefit to both importers and exporters. While there are some operational problems with the yard layout and operation in Chattogram and Kamalapur and with the availability of rolling stock, these are much less important than the failure to provide sufficient train frequency or to operate in a commercial manner. Investment in modernization and establishment of speed train network have to be on cards.

- ***Airfreight and Airport storage services:*** The limited capacity of airport facilities and the air freight services affects the ability of produce growers to make long-term arrangements with foreign buyers that enable both parties to ensure high quality and safe production. An open sky policy for regular air cargo movement needs to be put in place. Insufficient air cargo capacity in BIMAN leads to a quota system with small average quota sizes and imposes constraints on the expansion of exports by air.

- ***Ease of Doing Business:*** The regulatory environment for doing business in a country is yet another indicator of broad-based export competitiveness. The regulatory regime can raise the transaction cost of doing business and hurt exports. In the highly competitive global markets, the ability to respond swiftly and timely to business opportunities and commitments can be a critical factor underlying export competitiveness. Importantly, the regulatory environment is a major determinant of FDI inflows that can also substantially influence the domestic supply capacity to respond to the world export markets. Deficiencies in transport infrastructure need to be removed.

- ***Addressing Low Labor productivity and Skills Gap:*** On the labour front, Bangladesh is very favourably endowed with a large supply of under-utilized but low-skill labour. Notably, a substantial skills gap afflicts both the private and public sector which need to be addressed through effective programs of skills development at management and worker levels. The flexibility of the labour market has helped the RMG sector to mobilize and train workers at a low cost. Growing numbers of foreign workers in Bangladesh point to a shortage of supervisory and mid-level management skills. Mid-level and higher-level management employees are usually hired from neighbouring countries indicating a lack of semi-skilled and high-skilled workers. The incidence of enterprise-based on-the-job training is very low in Bangladesh, especially as compared to other countries particularly in East Asia. The RMG sector is in an excellent example of the kind of in-house training that delivers results. This practice needs to be replicated on a wider scale across the manufacturing sector. But this goal will have to be backed up with adequate and appropriate skill development programs targeted towards skill diversity to meet future needs rather than developing excellence in skills. Vietnam, which attracts vast FDI flows, developed a highly effective partnership program linking TVET institutions with FDI enterprises to maximize the benefit of spillover effects. In order to transform Malaysia into a high-income knowledge economy, the country went for substantial investment in education and human resource training, particularly vocational and tertiary education, with the result that Malaysia had developed the repository of skills necessary to drive a fast-paced electronic manufacturing and export sector.

The skills gap is not limited to the private sector alone. With the impending graduation out of LDC status looming in 2024, one can discern substantial skills gap in trade-related ministries for handling or coping with the emerging challenges that higher global competition will unleash. Recognizably, Bangladesh Government has serious capacity constraints in developing trade policies and trade negotiation strategies. The multilateral trade system (e.g. WTO) is under threat, with rising economic nationalism and protectionism worldwide and there are uncertainties surrounding the WTO-

sponsored trade opening. That makes it absolutely critical that Bangladesh prepares for bilaterally or regionally negotiated trade deals to address some of the challenges arising from its upcoming LDC graduation. In this context, the lead ministry, the Ministry of Commerce, faces certain skills gap that must be addressed. A quick assessment of "urgently needed" areas of trade-related capacities in the MOC lists expertise in such areas as assessment of trade prospects, analysis of trade data, training on WTO agreements, costs and benefits of regional or bilateral preferential trade agreements, costs of protection, policies to ensure export competitiveness and promote diversification, and so on. There is also pent up demand from other related ministries/agencies involved in trade negotiations for support and training in order to develop their capacities in specific statistical and econometric tools, analysis of the trade data and trade policy of other countries, training on WTO agreements, and training on trade negotiations. What is required are customised training programmes to develop some immediate technical capacities and assistance for commissioned research/technical studies for dealing with some of the urgent priorities, as outlined above. Furthermore, in a post-LDC Bangladesh and beyond, there is a need for strong recognition of the importance of mainstreaming trade and trade policies in the overall development strategies for the economy in the medium- to long-term.

II. Challenges related to trade policy and the incentive regime

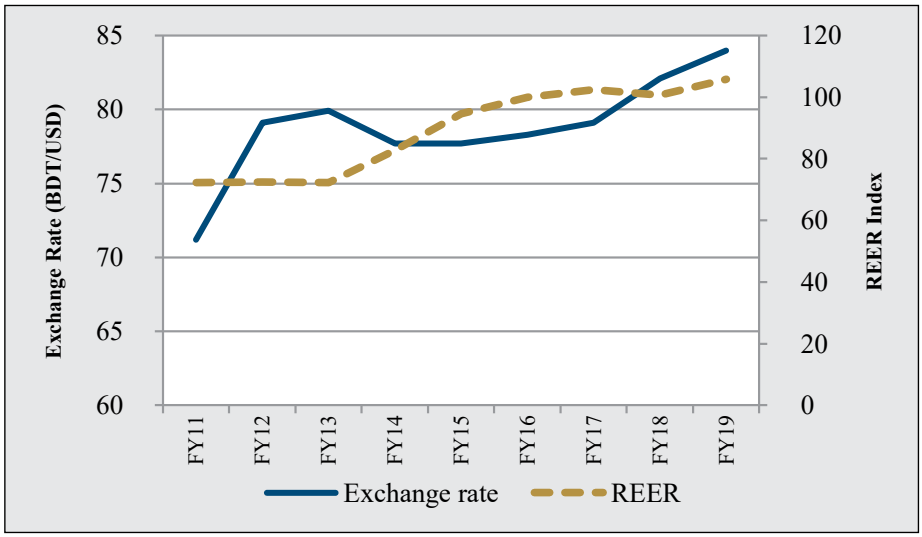
The experience of the high-performing East Asian economies clearly demonstrates the criticality of export-oriented trade policy for superior export performance. Trade policy could be a constraint or support to export growth and diversification depending on how it is formulated and implemented to ensure the competitiveness of exports. Together with export incentives it also concerns the attractiveness of investors to go into exports vis-à-vis domestic production. The three main components of these policies relate to exchange rate management; trade policy and fiscal incentives.

- ***Exchange rate management:*** Poorly managed exchange rates can be disastrous for economic growth. Research evidence shows that avoiding significant overvaluation (or appreciation) of the currency is one of the most robust imperatives that can be gleaned from the diverse experience with economic growth around the world, and one that appears to be strongly supported by cross-country statistical evidence. Overvalued currencies are associated with foreign currency shortages, rent-seeking and corruption, unsustainably large current account deficits, balance of payments crisis, and stop-and-go macroeconomic cycles, all of which are damaging to economic growth. Just as overvaluation hurts exports and growth, so undervaluation (depreciation) facilitates it. For most countries, periods of rapid growth are associated with undervaluation. China is the most fascinating case where economic growth tracks movements in the index of undervaluation. The rapid growth of GDP per capita in China since the 1970s was found to closely parallel the increase in the undervaluation index.

Bangladesh adopted a market-based exchange rate regime with effect from May 2003. By adopting a market-based exchange rate management and combining this with a prudent monetary and fiscal policy management over the longer term, Bangladesh avoided an appreciation of its real effective exchange rate for the most part. As a long-term strategy for export expansion, the appropriate exchange rate management would be to avoid rigidity or real appreciation of the Real Effective Exchange Rate (REER); a moderately depreciating REER would work better to sustain the competitiveness of

exports, particularly non-RMG exports. Figure 7.3 shows that there has been a slippage in this policy as the REER has been appreciating since FY12 making exports less competitive. This situation needs to be reversed as export performance during FY12-18 has suffered in consequence.

Figure 7.3: Exchange Rate Movements FY11-FY19



Source: Bangladesh Bank; Note: Rise in REER (FY2016=100) index indicates appreciation

- ***Trade policy stance:*** Though exchange rate management is part and parcel of trade policy, other instruments that affect export incentive include tariffs, quantitative restrictions on imports, subsidies, and so on. Perhaps the single most important determinant of export competitiveness is the incentive regime emerging from trade policy. International experience suggests that, in a high tariff regime, export success cannot come through subsidies provided to "thrust" sectors. It could, however, come through providing RMG-like free trade channel to existing and potential exports. That is the big policy challenge. While there is no magic recipe to promote diversification, a broad array of policies might be needed to create and sustain new export products. The important point to note is that the diversification challenge might be unique to each country context though some commonalities can always be identified. The Bangladesh context, for one, might call for some customized approach to addressing the problem, namely:

    - First, exports need imports. So, the import regime must be made seamless to facilitate duty-free imported inputs into exports. Why duty-free? Exports, to be competitive in world markets, must be provided with world-priced inputs. Duty-free makes imported inputs bought at world prices.
    - Second, the incentive structure for exports must be set right (i.e. removing anti-export bias) by ensuring that relative incentives for export and import substitute production are about the same;
    - Third, lowering the costs of trade-related services (improved trade and transport logistics, and, of course, energy infrastructure) is critical for ensuring export competitiveness;

- Fourth, proactive policies, such as helping exporters upgrade existing products, break into geographic markets, and launch and consolidate new line of business abroad, might be important in respect of the limited capacity of the government.

Though progress in product diversification so far has been muted, Bangladesh has made good strides in geographical diversification as the share of exports to top 5 destinations has fallen significantly over the past decade and exports of over one million dollars reached 122 countries in FY18, compared to only 61 in FY90. The strategy of geographical diversification is expected to yield good dividends as markets open up in Japan plus emerging market economies of Brazil, Russia, India, and China. Likewise, the application of technology and improved management techniques will raise productivity and ensure quality diversification, by introducing higher value-added exports of existing products like RMG.

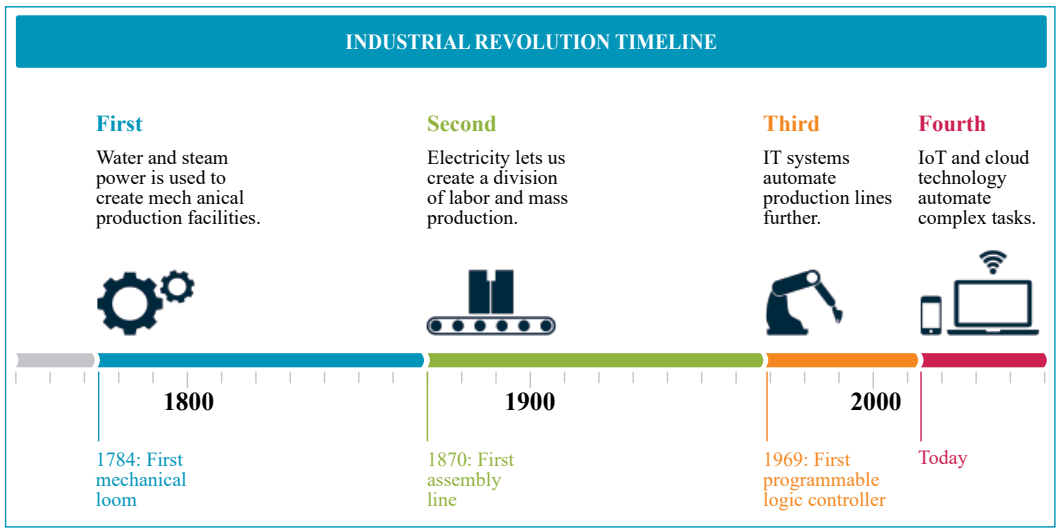
- ***Fiscal incentives:*** Like most developing countries seeking to expand exports, the Government has taken a positive fiscal stance in promoting exports. The RMG sector is the highest beneficiary of the various fiscal concessions. In addition to the duty drawback scheme accorded to all exporters, the RMG exporters enjoy the special privilege of paying only a nominal income tax on their earnings. In addition, the government offers direct cash subsidy to exports of non-traditional items, announced on an annual basis, with the rate varying from 1% on Ready Made Garments special incentive to 20% on halal meat and potatoes in the current year (FY2020). Fiscal incentives should not be ad hoc. The basis should be a potential competitive advantage determined by research evidence. For all the fiscal incentives for exports, they are no match to the high tariff protection received by import substitutes.
- ***Emphasis on services exports:*** Bangladesh presently has a huge negative balance on the services account excluding remittances. This is another potential area for expansion of exports. With proper policies and investments, Bangladesh should be able to expand its export earnings from shipping, air transport, foreign students in Bangladesh, ICT and tourism. The prospects are particularly bright for tourism where the Bangladesh Parjatan Corporation is making a solid effort to expand tourism facilities and trained manpower. The multiplier effects of the expansion of tourism on GDP growth and employment are large and every effort should be made to push this high-potential growth activity.

Finally, industrial policy needs to address issues of education and skill development for facilitating higher capabilities for export diversification, attracting FDI and integrating with global value chains. Experiences from different countries, who have been successful in diversifying their export portfolios, also suggest that institutional reforms should be considered as a key to overall policy reforms targeting larger export response and export diversification. Improving the bureaucracy quality, ensuring property rights, managing corruption, ensuring contract viability through reduction of the risk of contract modification or cancellation are examples of such institutional reforms.

7.2.3 Trading under the Fourth Industrial Revolution and Beyond

The world economy is now in the grip of the Fourth Industrial Revolution. In order to strategize on the approach to trade and industrial growth over the next 20 years, it would be necessary to get a good understanding of what the on-going Fourth Industrial Revolution (Figure 7.4) is, what

Figure 7.4: Charting the Course of Industrial Revolutions



Source: Extracted from Mjolner Informatics, Realizing the Fourth Industrial Revolution.

it means for Bangladesh, and the kind of opportunities and challenges it presents for Bangladesh's race to become a UMIC and HIC. The first and second industrial revolution of the 19th and 20th centuries is long over. The Third Industrial Revolution brought computers and the internet. The Fourth is expected to be much broader as machines are becoming smart and connected, contributing to the dynamic fusion of technologies in the digital age. The prospect of another industrial revolution—the Fifth—in the course of the next 20 years cannot be ruled out and must be taken into account in formulating national policies that are flexible and compatible with the changing landscape of trade and industry in the 21st century.

According to OECD, the Fourth Industrial Revolution (FIR) entails a confluence of technologies ranging from a variety of **digital technologies** (e.g. 3D printing, Internet of Things, advanced robotics) to **new materials** (e.g. bio- or nano-based) to **new processes** (e.g. data-driven production, artificial intelligence, synthetic biology). These technologies will be available universally in the near future (10-15 years, according to OECD). As these technologies have an impact on the production and the distribution of goods and services, they will have far-reaching consequences for productivity, skills, income distribution, well-being and the environment.

Contrary to popular belief, research on firms and industries shows that the employment effects of technological change are generally positive as productivity-enhancing technology causes job losses in some cases and job gains in others. But the number of firms and industries which experience employment growth exceeds the number in which employment contracts. Bangladesh industry is gradually embracing the latest technologies though cost imperatives make labour-intensive production still attractive. It will take several more years for technological change to catch up through leapfrogging innovations that are technology-intensive will also happen in the near future, as recent reports from the RMG sector seem to suggest. These changes (described as automation) have to be closely watched due to the risk of machine-driven labour displacement, which might undermine labour-cost advantages on which Bangladesh has been relying so heavily.

Trade and industry in a digital world: The spread of digital technologies is transforming all types of global flows - those of goods, services, money, and people - and this transformation are only in its earliest stages. Already, more and more of people across the globe engage in instantaneous cross-border exchanges of digital goods, from books and music to design files that enable 3-D printing of physical objects. As the infrastructure that supports the internet expands, barriers of distance and cost that once seemed insurmountable have begun to fall away. Digital trade represents an important, albeit hard-to-measure, component of these global flows. As it grows, develops, and assumes new forms, it is both facilitating globalization and transforming it.

Digitization lowers marginal production and distribution costs while broadening access to global commerce. The cost of participating in trade is reduced not just for large companies, but also for individuals, small firms, and entrepreneurs. This is already spurring innovations in business models and spawning the emergence of micro-multinationals, micro-work, and micro-supply chains that are able to tap into global opportunities. Digitization is opening the door to SMEs and even individual entrepreneurs to take part in cross-border commerce and exchanges, giving rise to a new era of "micro-multinationals". Through e-commerce, even small companies can export through online platforms. Digitization has also cut the fixed costs of starting a business for entrepreneurs since more and more inputs can be purchased on a margin basis. In the past, online businesses needed to buy servers and hire large engineering teams to build their systems virtually from scratch. A company today can buy incremental server capacity from Amazon Web Services, for instance, and hire leaner development teams that can build on top of pre-existing platforms. Business-support services, such as legal and accounting services, can also be outsourced online through platforms, such as Upwork and Freelancer. This means that businesses can start up with far less up-front investment and can scale up much more quickly. The implication is that the pace of innovation has the potential to further accelerate as an increasing number of lean-and-mean entrepreneurs and engineers test and iterate more ideas.

The Internet of Things (IoT) - the ability to monitor and manage objects in the physical world electronically will enhance and accelerate these developments. Digitization has already had a significant impact on trade by transforming logistics and supply chains; companies can readily track and collect information about a product, place, time, or transaction using sensors or other digital "wrappers," to improve their operating efficiency and reduce costs. This process, too, is at an early stage, and we believe that its impact could be considerable over the next decade. Of the seven stages of Digitization identified (Computerization, Connectivity, Information, Knowledge, Prediction, Autonomous decision making, and Artificial Intelligence (AI)), Bangladesh is still in the earlier stages and has a steep learning curve ahead.

But the digital world of the future also opens up opportunities for developing countries like Bangladesh who can leapfrog in the path to technological transformation. There is little doubt that the TRIPS Agreement will need to be revamped as IR4 deepens around the world. It is evident that the current degree of innovation in developing countries is low (relative to their potential) due to the poor protection and enforcement of intellectual property rights. Protecting intellectual property rights across the developing world has to improve for them to attract and absorb the technology

and benefits which the 4IR will bring. TRIPS can be amended and updated in order to lay down the requirements for the institutional framework which will not only improve the current state of protecting intellectual property rights across the world but also help the developing countries better cope with the structural and technological changes which the 4IR might bring along.

7.3 Challenges and Opportunities for Bangladesh in a Competitive World

As the 21st century rolls into the third decade and onwards, tremendous opportunities will open up for Bangladesh entrepreneurs in a competitive global market to trade in goods as well as services. But opportunities will be associated with enormous challenges stemming from fierce competition in global markets with rapidly changing demand structures, over time and space. The speed of Bangladesh's industrialization with job creation will depend on how well the economy is integrated with the global economy, with well-heeled policies to capture external markets while removing distorted incentives in domestic markets.

7.3.1 Strengthening Competitive Advantage

A nation's industrial and export success over time will be defined by the ability of its firms to acquire and sustain competitive advantage. But there is nothing guaranteed about competitive advantage. The past and future of competitive advantage could be a lot different. Internationalization of competitive advantage has already taken place. As trade barriers have come down, it has also become difficult to shelter uncompetitive firms. Gone are the days when it could be said that countries with low-cost labour will have all the advantage in labour-intensive products and nations with plenty of capital will specialize in capital-intensive products. Technology and innovation have cut into the roots of this thinking. China's labour cost advantage was not enough to catapult it into the global stage as the export powerhouse. The application of technology and innovation was just as important for its firms to gain a sustained competitive advantage in many diverse technology-intensive products. Having recognized that innovation requires sustained investment in research, physical capital, and human resources, the Chinese government is now making sufficient resources available for its firms to invest more in these areas (R&D) to gain and sustain the competitive edge.

There are stark lessons for Bangladesh. Competitive advantage founded on low labour cost cannot be guaranteed for all time. The new theory of competitive advantage starts with the premise that competitive advantage is dynamic and evolving. It was Joseph Schumpeter who recognized decades ago that there was no "equilibrium" in competition. In the international competition of tomorrow, competitive advantage cannot be a static idea but a dynamic one. Bangladeshi firms in RMG or other export industries must recognize the fact that competitive advantage grows and is sustained through relentless improvement, innovation, and change. From its current phase of factor-driven competitive advantage, Bangladeshi firms will have to move into investment and innovation driven competitive advantage. Without such efforts, the current competitive advantage in labour-intensive garment exports could well be lost in future. History and cross-country evidence shows that there are few competitive advantages that cannot be copied. Take the case of S. Korea which trumped Japan in the production of TV and electronic products in a matter of years. So did Brazil over Italy in leather shoes, and China-Vietnam is about to do so in non-leather sports shoes which means that Bangladesh's current leadership in garment exports can only be augmented and sustained over the

long-term only through relentless innovation, and improvement in the management of labour, skills, technology, and capital, extending its competitive advantage to many more products. The state will have to play a significant but facilitating role in ensuring that the competitive advantage of our private firms is sustained over the long-term.

To address future challenges and ensure competitiveness, a harmonious public-private endeavour has to develop in Bangladesh in the following priority tasks:

- Easing infrastructure constraints
- Enhancing the quality of the workforce
- Investing in R&D to promote innovation at every stage of production
- Improving the business climate and reducing the costs of doing business.
- Mobilizing the large amounts of financing needed for physical and social infrastructure, including through private investments and public-private partnerships
- Ensuring environmental sustainability and climate resilience

In the coming decades, as Bangladesh graduates out of its LDC status into a Middle Income Country (MIC), under international rules of the game (WTO compliant), it would be difficult to shelter uncompetitive firms or industries because in keeping step with global competitors Bangladesh will have moved towards greater trade openness making exports and domestic sales equally profitable. To create employment for some 1.5-2 million entrants to the job market, jobs in large and SME enterprises will have to be linked as much to the economy's external sector as to its domestic market, recognizing that factories of the future will be small and flexible rather than large and rigid, and located close to the end customer.

7.3.2 Integration with Global Value Chains and its Challenges

There are several supply-side factors that may have contributed to constraining effective participation in the GVC for Bangladesh. These factors are directly associated with the domestic production and investment environment. Most prominent of these factors are: (1) access to finance, (2) weak physical infrastructure, (3) inefficient ports and high transport costs, (4) shortage of skilled workers, (5) technological bottlenecks, (6) lack of entrepreneurship and management skills, (7) lack of information, and (8) high costs of doing business.

The fragmentation of production processes across different countries has given rise to global value chains (GVCs) creating opportunities for intra-industry trade globally as well as between contiguous economies within a region. East Asian countries have seized early opportunities from this development by linking up with China – the world's assembling powerhouse. Bangladesh started as a pure 'assembler' in low value-added GVC activity – cutting and making of readymade garments (RMG). Thanks to the initial infusion of FDI, bringing technology, management techniques, marketing access and information, both forward and backward linkages were established. Today, Bangladesh has become a leading exporter of RMG in the world – a clear example of the export-promoting and job creation potential of GVC.

There are important lessons from this experience regarding the prospects, challenges, and opportunities for Bangladesh stemming from GVCs in other product or service sectors. First, it was a foreign investor – in this instance, Daewoo of Korea – which facilitated Bangladesh's entry into the GVC by teaming up with a Bangladeshi company – Desh Garments. Second, it was a fact that the choice of the GVC component was based on Bangladesh's comparative advantage in low-skill intensive manufacturing production. Then, it must be the case that Bangladesh also had a comparative advantage in many other low-skills intensive manufacturing production – which could be in final consumer goods or intermediate goods. Yet, there was no progress in the emergence of intermediate goods in Bangladesh's export basket.

What must Bangladesh do to utilize GVCs to break into new markets and export new products? What are the entry barriers? As mentioned earlier, to exploit GVCs, entrepreneurs may exploit two specific options: (1) produce intermediate goods; or (2) emerge as an 'assembling' hub. With regards to the first, Bangladesh entrepreneurs need to identify components that involve labour intensive or low skill-intensive processes while searching to establish strategic partnerships with established transnational who will assemble the final product in another location. The tax regime (domestic and import) is an area that will need serious work to attract FDI. With regard to the second option, Bangladesh may ponder emulating China's successes at GVCs by emerging as an 'assembling' hub. In this case, it is instructive to look at the economic rise of China associated with the emergence of a distinctive structure for the Asian-US production system, commonly understood as the 'tri-polar trade through China' model. In this structure: (i) East Asian countries, except China, produce sophisticated parts and components and export them to China; (ii) China assembles them into final products; and (iii) these are further exported to the US and EU markets for consumption.

There are several strategies to consider. To start with, if local entrepreneurs are willing to engage in the production of intermediate goods, then it is probable that they will face issues that are associated with efforts dedicated to 'learning how to imitate'. In short, the technical 'know-how' needed for the production of an intermediate good in the GVC must be obtained since Bangladeshi entrepreneurs are not exposed to such expertise. In this context, a prudent strategy for local entrepreneurs is to opt for a collaborative production structure that builds long-run commitments between local and foreign actors, so that the technical 'know-how' needed by the local actors is obtained by inviting FDI. Not only in the production of intermediate goods, courting FDI will be essential for future technology leapfrogging to capture production and market access in manufacturing products of the coming decades.

Furthermore, in order to promote integration into GVC (and attract FDI with this objective), the following steps would be essential:

- A liberalized investment policy regime, which offers scope for international firms to have an unlimited stake in the local firm.
- Joint ventures with established actors within the GVC will allow the diffusion of technology, which ultimately boost the export potential of the local firm.
- Local firms must have the capacity to innovate and acquire a basic level of technological standard so that such types of cooperation are possible.

- Availability of appropriately skilled labour at a competitive price, which motivates established foreign actors to participate in joint ventures with local players.
- The government has an important role to play in kick-starting GVCs in non-RMG export sectors. Various support policies (e.g. low-cost credit, tax waivers, generous transfer pricing rules) can be devised that can bypass current WTO 'rules of the game', as WTO regulations have yet to catch up with the rapid growth of trade in value-added (GVC).

7.3.3 Challenges Associated with the Graduation from LDC Status

In 2018 Bangladesh met the thresholds to graduate from the Least Developed Country (LDC) status of the United Nations (UN) country classification and is now on track to formally graduate from LDC status by 2024[8]. Benefits of graduation from the LDC status are cited to include an improved country-image and higher rating for investment by international rating agencies which may attract larger foreign direct investment. However, there are a number of risk factors for Bangladesh associated with its graduation from the LDC status. Preliminary simulation results from the global dynamic general equilibrium model suggest that the loss of preferences in the markets of European Union, Canada, Australia, Japan, India and China in 2024 (the year which will mark the end of LDC preferences for Bangladesh) might lead to an annual reduction in total exports of Bangladesh by 11% which would be equivalent to around USD 7 billion given the current projection of growth in exports. Also, many of the exemptions of WTO provisions, including the cut in tariff and subsidies and adherence to intellectual property rights (especially for pharmaceuticals sector), which are currently enjoyed by Bangladesh as an LDC, will no longer be available after 2024, except for EU which allows a transition period until 2027. Furthermore, as Bangladesh has already graduated from the World Bank's 'low-income' category to 'lower-middle-income' category, the scope for loans at lower interest rates would be limited. It is important to mention here that much of the aforementioned prospective benefits are not 'automatic' as the country has to work quite a lot to materialize those benefits. In contrast, almost all of the possible losses would be 'automatic' as soon as the country graduates from the LDC status. Therefore, the country has to prepare itself over the next 7 years to counter these losses.

7.3.4 Sub-regional Cooperation for Integration in East and South East Asia

In order to take forward the regional integration process in South Asia a good and effective initiative is the Bangladesh, Bhutan, India, Nepal (BBIN) initiative, which is a sub-regional coordinative architecture of countries in South Asia. BBIN operates through Joint Working Groups (JWG) comprising official representation from each member state to formulate, implement and review quadrilateral agreements. Areas of cooperation include water resources management, connectivity of power grids, multi-modal transport, freight and trade infrastructure. Focused on the subcontinent's northeast, it endeavoured to cooperate on trade, investment, communication, tourism, energy and natural resources development. Its objectives have been expanded over years to incorporate substantial land and port connectivity.

The economic needs and drivers for deeper integration in the BBIN sub-region are more prominent compared to these countries' integration with the rest of South Asia. Especially, a deeper integration among the BBIN countries is very important to place BBIN as the gateway for further integration with China and Southeast Asian countries. The political economy drivers also seem to be more

8 GDP growth in 2020-2024 is expected to be on track averaging 8.2% per annum.

favourable. In the context of some structural factors and landlockedness of Nepal and Bhutan, the BBIN sub-regional initiative has seen a great interest from the political elites from these four countries. The extra-regional drivers for BBIN are also favourable as there are growing interests from international organizations like the Asian Development Bank (ADB) and the World Bank for improvement in connectivity and infrastructural development in this sub-region.

Bangladesh should also try for integrating with East and Southeast Asia on a wider scale. Over the past three decades, the regional integration agenda for Bangladesh has focused primarily on integrating with its South Asian neighbouring countries. However, there are reasons to believe that Bangladesh can also gain significantly by integrating more with the East Asian countries (China, Japan and South Korea) and Southeast Asian countries (10 ASEAN countries. i.e. Brunei, Myanmar, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand and Vietnam). When it comes to export diversification, in terms of both product and destination, integration with East and Southeast Asian countries is very important for Bangladesh. A major reason why integration with East and Southeast Asia will prove to be beneficial for Bangladesh is because East and Southeast Asia are essentially integrated with the Global Value Chains (GVCs) in a number of manufacturing products. Thus, such integration will pave the way for linking Bangladesh with wider GVCs and in diversifying its export basket. In addition, flows of Foreign Direct Investment (FDI) from these countries to Bangladesh will be beneficial for the economy. Among the Southeast Asian countries, Indonesia, Malaysia and Vietnam are large exporters of electronics, machinery and leather goods, primarily driven by the leading multinational companies in the world. Therefore, the integration will lead to a number of multinational companies specialized in electronics, machinery and leather goods investing in Bangladesh, thus generating large spill-over benefits to the domestic economy. Bangladesh should actively pursue the agenda of free trade agreements (FTAs) with these countries, either bilaterally or with the region as a whole (i.e. with ASEAN). Finally, enhanced connectivity with China and other Southeast Asian countries through BCIM, Asian highway and Trans-Asian Railway network can be accentuated.

7.4 Trade Prospects, Trade Strategies and Policies for the Future

The most common position with regard to trade policy in Bangladesh may be summarized thus: trade is to be promoted, exports are to be expanded and for that to keep the country's balance of payments at manageable levels. This approach to trade results in a structure of tariffs that impinge heavily on the global competitiveness of exports and import substitute production, necessitating significant reforms and modernization of all constituents of trade policy, customs administration, and trade infrastructure, in order for Bangladesh to be dynamically competitive into the next decades of its development. It is an empirical fact that while tariffs around the world have come down significantly over the past 25 years, tariffs in Bangladesh remain stubbornly high relative to its comparators. Trade theory and empirical evidence suggest this is not conducive to dynamic export performance. Therefore, necessary initiatives including the reduction of tariff rate need to be initiated to make the country competitive in the international market.

7.4.1 Tariffs, Protection, and Trade Policy Affecting Exports

Theoretically, a tariff is an indirect subsidy on import substitutes and a tax on exports. The protection that is afforded through nominal and effective tariffs is also a tax on consumers who bear the ultimate burden of the protection tax by having to pay higher than world prices (tariff-inclusive price) for

imported products. So, policymakers need to balance the support they extend to producers with the social costs of protection. The community as a whole stand to gain from protection only when the objective of protection is met: domestic import substitute producers become globally competitive in the shortest possible time so that protection can be removed and domestic prices of import substitutes converge to international prices. The longer this takes, the higher are the social costs of protection.

The other adverse implication of tariffs and protection is the anti-export bias they create resulting in dis-protection of exports which, in the first place, have to operate under zero protection in the world market, provided they are fully compensated for duties they have paid on imported inputs prior to exporting. If they do not receive full duty drawback or if they are not given the facility of importing inputs duty-free, export production becomes subject to negative protection; a substantial anti-export bias of policy.

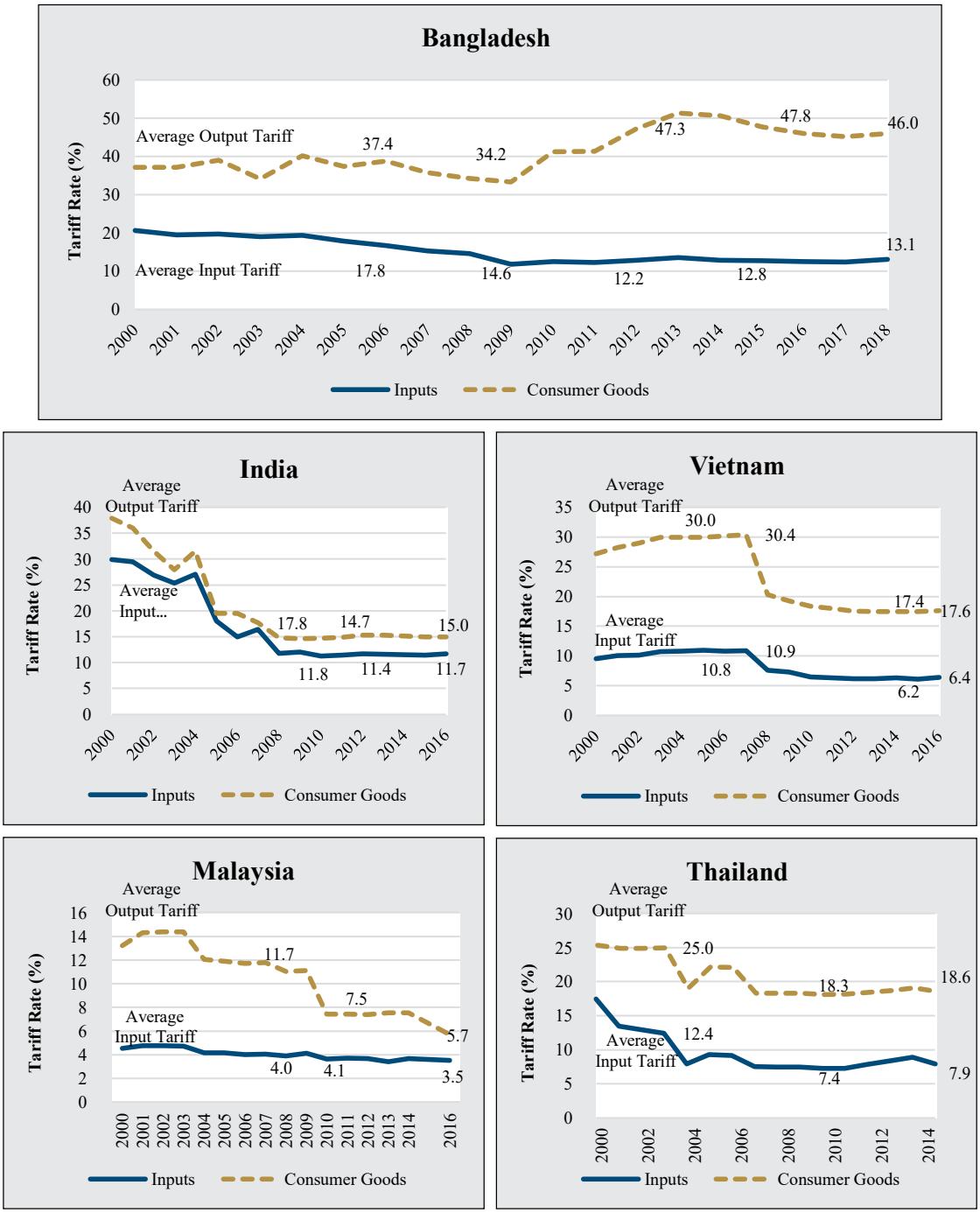
Hence, the trade policy stance that is suitable for globally competitive export production must be characterized by low and uniform tariffs and a seamless export-import regime that facilitates least-cost transactions at the border. Malaysia is a classic example of an economy that abandoned a high tariff regime very early in its development and now has the lowest tariffs averaging 7-8%. The economy is fast approaching HIC status in the next few years. S. Korea, another country that reached HIC status in four decades, aggressively dismantled anti-export bias of the trade regime to become an export powerhouse.

Does Bangladesh tariff regime fulfil this requirement? Around 1990, an assessment of the World Bank's Industrial Sector Adjustment Credit (ISAC II) project revealed that roughly 40% of the tariff lines were subject to over 100% tariffs in addition to widespread bans and restrictions on imports. It produced a highly prohibitive import regime that nevertheless failed to result in any breakthrough in import-substitute production or preventing an impending balance of payments crisis. Tariff rationalization and import liberalization became a trade policy imperative.

7.4.2 Tariff Modernization is an Imperative

Bangladesh's trade regime needs the further rationalization and modernization of the tariff regime. Research and cross-country evidence regarding protection confirm that (a) protection once given has a tendency to perpetuate as producers in protected activities develop a vested interest in maintaining it; (b) industries protected for too long become inefficient and uncompetitive at the global level as they have little incentive to innovate or raise productivity. A close examination of the structure of tariffs reveals that the decline in average nominal protection rate (NPR) was due primarily to the reduction in tariffs on basic raw materials, capital goods and intermediate inputs, while the top customs duty (CD) rate remained flat at 25% since FY05, topped up by generous supplement of levies such as supplementary duty (SD) and regulatory duty (RD) – para-tariffs. The trends in nominal protection rates of import categories reveal that in the recent past the average NPR for input categories have been declining rapidly while that of final consumer goods remained practically flat if not increased. The wedge between output and input tariffs has become unusually large, unlike that in any other country (Figure 7.5). What is seldom recognized is that this trend of input and output tariffs is unique for Bangladesh and deviates far from the pattern followed by the high-performing economies in East Asia. This needs to change for the future.

Figure 7.5: Trends in Output and Input Tariffs: Bangladesh and comparators



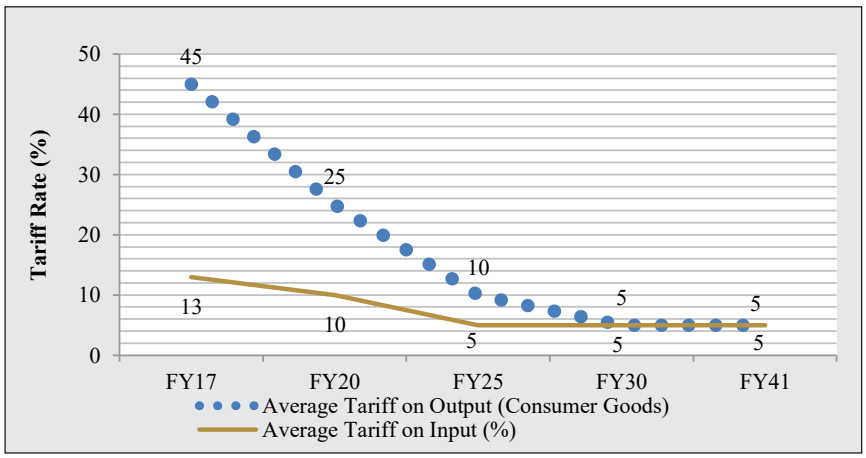
Source: GED estimates based on data from NBR; WITS Database, World Bank

The common perception is that reduction in input tariffs while keeping output tariffs high makes domestic production of import substitutes more competitive. But the net outcome of this process is higher effective protection to domestic producers over time yielding windfall profits simply through tariffs and without any improvement in productivity or competitiveness. This simply cannot be a long-term protection strategy for an economy seeking a productive and competitive industrial sector of the future.

To continue on a path of sustainable export growth with a diversified basket of goods, Bangladesh faces an immediate challenge to restructure its tariff regime in order to gradually phase out effective protection levels and anti-export bias. A possible tariff and protection regime of the future is charted in Figure 7.6. In view of the currently high levels of NPR on final consumer goods (FCG), the proposed structure calls for gradual but significant reduction of NPR on these goods while making modest adjustments to input tariffs along the way, in order to reach a tariff structure by 2041 that is reflective of a high-income developed country[9]. Hence, the average FCG NPR of 45% in FY17 will need to be pared down to about 25% by FY20, to about 10% by FY25, and to around 5% by FY31 through FY2041. Meanwhile, average input NPRs will need to decline from 13% in FY17 to about 10% by FY20, and down to about 5% by FY31 through FY2041. Thereafter, the tariff regime will be one with low uniform tariffs of about 5% or less without distinction between input and output. On the face of it, the proposed tariff and protection trend would appear contrary to current trends, but that seems to be the only way to go if Bangladesh is to undergo transformative change in its structure of production where production, jobs and income hinge on the success of exports which, by FY31 and beyond, could constitute 60-75% or more of GDP.

In a few instances, trade protection may be justified on the grounds of dynamic comparative advantage. For a range of reasons, a high-potential activity may be under-performing or may be unable to meet stiff international competition, but this can improve performance and become competitive through learning by doing. The record of poor performance of protected enterprises and the adverse effects on export incentives dictates that trade protection policy must be very selective, decided on merit and is time-bound and performance-based.

Figure 7.6: A Futuristic Tariff Profile (FY17-41)



The main problem with further tariff rationalization is the concern related to the potential revenue shortfalls of the Government. Although the loss in revenue could arguably be made up either by expanding the domestic tax base or by increasing the VAT net or a combination of both, the tax administration in an LDC like Bangladesh is not as flexible as in developed countries for undertaking an increased revenue mobilization effort within a short period of time. Also, increasing the rates of revenue-generating tax measures such as VAT is difficult given the dominance of the informal

9 Notably, current average tariffs in OECD member countries, according to World Bank's World Tariff Tables (2017), is only about 3%, with average at 2.4%, non-EU OECD members at 2.8%, with the USA showing only 3.4% before the 10-25% tariffs were applied on Chinese imports.

economy. At any rate, another important feature of any HIC is the insignificant contribution of customs to total revenue generation which would have to rely on direct taxes (i.e. income and corporate taxes) and VAT. Reliance on trade taxes will have to be phased out by 2041 by which time the primary role of customs administration will be to facilitate trade[10].

Another scope for tariff liberalization is the mutual exchange of tariff preference under Regional Trading Arrangements (RTAs) and Free Trade Agreements (FTAs) involving Bangladesh. Such arrangements may result in significant trade creation with favourable effects on employment generation and poverty alleviation. While Bangladesh remains committed to a multilateral trading system, options of trade expansion through regional cooperation should be given serious consideration.

7.4.3 Trade Policy of the Future

For effective export promotion, in addition to the export policies, a set of other complementary policies and programs are critically required. Stabilities of the macroeconomic environment, the effectiveness of the export promoting and supporting institutions, and smooth functioning of the financial markets are necessities. Furthermore, the quality of governance should be improved through promoting transparency and accountability, and by reducing the extent of corruption. The government should also take an effective role in technology diffusion and in providing appropriate physical infrastructural facilities.

The export-led growth philosophy underscores the need for setting up an incentive structure that overcomes the problem of serious policy-induced anti-export bias. The notion of anti-export bias is related to the trade policy measures that act to favour the import-substituting sector and discriminate against the export activities. The principal route to this 'bias' or discrimination is accomplished by altering relative prices of exports and domestic sales. While for exporters it is not possible to influence the world price, import tariffs and quantitative restrictions allow the producers to raise the domestic price of their commodities above the world price. The resultant profitability (and thus the relatively high price of import substitutes to export goods) under the shield of protective measures encourages reallocation of resources from the production of exportable to that of import substitutes. Also, policy-induced domestic production may result in increased demand for non-tradable diverting further resources into this sector at the cost of exportable. Bangladesh has liberalized its economy quite considerably now and particularly in the 1990s, the pace of liberalization has been very rapid. That has moderately reduced the policy-induced anti-export bias. True, the domestic market is expanding rapidly with a fast-growing middle class strengthening domestic demand. Over time, future trade policy must move towards neutrality between domestic and export markets, with a slight tilt for exports.

If anti-export bias is so prominent in our trade policy orientation, it is pertinent to ask how is it that RMG exports rose to such heights as to make Bangladesh one of the leading RMG exporters of the world. It goes to the sagacity of our policymakers to have devised a "free trade channel" for this 100% export-oriented sector within an otherwise high tariff regime. Aided by the MFA which gave access to world markets, domestic policies designed exclusively for RMG industry, comprising special bonded warehouse and back-to-back LC, were able to soundly neutralize anti-export bias of a

10 Our total revenue is projected to be 19.5% of GDP by 2041 (see Ch 3 Annex A) at which time reliance on customs revenue will be minimal, under 1% of GDP like in developed countries, with the bulk of revenue coming from income and corporate taxes and VAT.

high tariff regime. Indeed, these policies constituted the bedrock of success for this labour-intensive industry that symbolized Bangladesh's strength in low-skill intensive manufacturing, the sort of specialization that should spill over to other industries as well. Replicating these policies for non-RMG exports is the way to go as long as high tariff protection prevails.

Apart from the uniformity of the tariff structure, other aspects of efficiency and transparency will be added to customs administration which, by 2025, will no longer have a major role in revenue collection because domestic taxes (income tax and VAT) will become the principal revenue instruments. Trade facilitation will be the underlying principle of its existence. Still, protection of specific products through the application of tariff peaks (a high tariff rate) might emerge from time and time and exceptions to the uniform tariff rule would then have to be made as temporary measures. Such a tariff structure will impart minimal distortion to domestic production and trade. From 2031 onwards, a modern high-tech industrial sector should be able to function with seamless movement of goods and services across borders or via online with least transaction costs.

Institutions: Policy frameworks need institutions to become effective. In other words, it is institutions through which strategies are ultimately implemented. Besides, trade or export policies usually encompass a number of institutions or departments and coordination of their tasks has important implications for all eligible exporting firms' benefiting from incentives. Therefore, strategies need to be outlined in details and the roles and responsibilities of relevant institutions and departments should be articulated.

The next decade will be crucial for strengthening economic institutions that will help entrepreneurs seize market opportunities emerging in a fast-changing global economy driven by innovation and creative destruction. In order to attain and sustain high economic growth what is needed is building and nurturing inclusive economic institutions that are effective in enforcing property rights, creating a level playing field for small and large entrepreneurs, SMEs and big business, and encouraging investment in innovation, adoption of new technologies and developing skills for the future.

Trade policy analysis of the preceding sections establishes several key features of successful export-push policies for industrialization in Bangladesh:

(a) ***Protection must be time-bound.*** Trade protection may be used as a policy instrument when justified on the basis of a careful analysis of dynamic comparative advantage. Protection, even if justified on strategic grounds of dynamic comparative advantage, must be made time-bound and performance-based, with a prior announcement for scaling down protection over time. Protection in LMIC and UMIC economies are modest at best, and in HIC, only for selected agricultural commodities (e.g. rice in Japan and Korea are subject to 300%+ duties).

(b) ***Access to world-price inputs must be ensured for all exports.*** While import substitution policies prevail, support schemes have to be put in place to ensure that all exporters have access to world-priced inputs so that they compete in the international market on a level playing field; high protection to import substitutes prevent graduation of such industries from becoming export-oriented.

(c) ***Access to long-term and short-term financing*** must be made available to both large and small exporters in a country where large numbers of small exporters are unable to scale up their export activities due to various constraints.

(d) ***Foreign direct investment (FDI):*** Partnership with good international investors that can support technology transfer, create market access abroad and jobs at home, can be the ultimate boost for exports. Most important for the next decade, FDI can help bridge the technology gap and make Bangladesh manufacturing play catch up with the latest advancement in global manufacturing.

(e) ***Government support to open external markets.*** For developing countries like Bangladesh, preferential access is granted under various schemes (e.g. EBA in EU, GSP in others) in developed markets, but government assistance and support through embassies are prerequisites for successful market penetration in the largest global markets, such as EU, North America, Japan, and emerging economies.

(f) ***Policy flexibility helps.*** Not all good policies produce their intended outcome. Experience of successful export economies shows how flexibility in policy implementation averts crisis. When a policy does not yield results there should be scope for changing directions.

7.5 Strategic role of Service Sector in Future Trade and Industrial Progress

The service sector is indeed the largest of the three broad sectors of the economy – agriculture, industry, and services – making up 53 per cent of GDP. Leading futuristic experts prognosticate that a variety of services will dominate economic activities in the 21st century. As economies climb the income ladder, they have larger service sectors. Most OECD countries sport service economies at 70-80 per cent of GDP. Therefore, it is inevitable that, for Bangladesh in 2041, the focus should be on moving from a low-productivity largely informal service sector to a dynamic and modern service sector of the future, keeping step with a fully integrated global economy.

7.5.1 Performance of the Service Sector in Trade

A rapid pace of industrialization centred on export-oriented manufacturing has been responsible for growth acceleration of the Bangladesh economy thus far. Consequently, industry share in GDP outstrips those of agriculture as national incomes rise. Looking into the future, there is little doubt that industry will remain the key driver of growth at least until Bangladesh becomes an Upper Middle-Income Country (UMIC) by 2031. Thereafter, (or even earlier), the economy will be driven by a combination of futuristic digital and industrial revolution in which, according to expert analyses, services will be making heavy inroads. Global analysts agree that the next 20 years will experience a new wave of accelerated globalization driven by cross-border flow of technology, capital, and knowledge, within a global infrastructure characterized by the greatest trade openness to trade and investment. Also notable is the rising importance of global value chains, where services are actually embodied in manufactured goods.

Future of Trade – rise of services: One notable development is what leading trade experts call the "dematerialization" of global trade, that is, the rise of trade in services. Only recently have we begun to realize more fully the importance of services to the world economy. The contribution of services to production and trade has been steadily growing. New statistical work by the OECD and WTO

shows that when we measure services in terms of their real contribution to trade – that is in terms of value-added rather than gross flows – the share of services in global trade was almost half in 2009, as opposed to less than one-quarter using the old measure. This is due to the rising importance of global value chains where services are actually embodied in manufactured goods showing that trade in services is larger and growing faster in value-added terms than traditional statistics show.

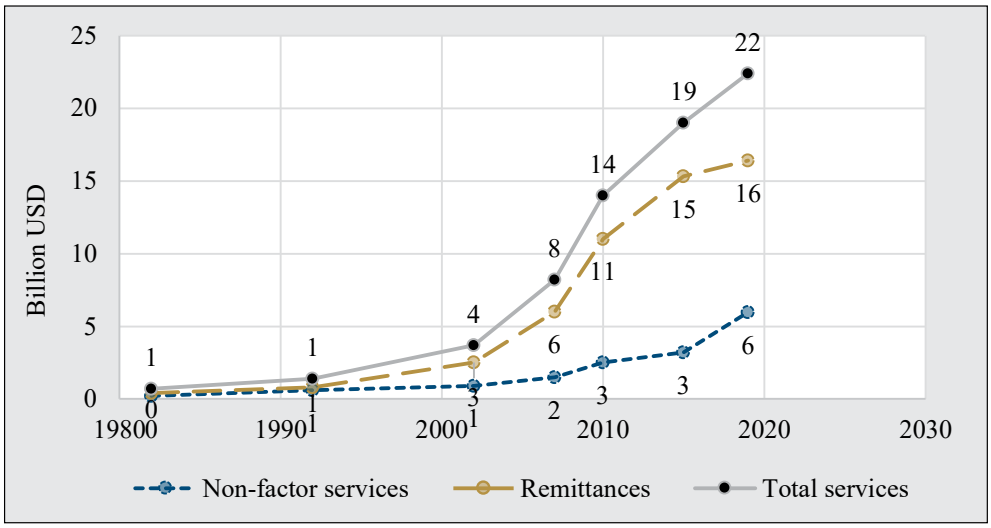
Global analysts foresee a world in which service-led industries are dominant and where businesses with explicit sustainability goals will succeed. This is one area that needs immediate policy attention if Bangladesh is to seize opportunities as barriers to trade in services crumble in future. Another key focus of future export competitiveness of Bangladesh will have to be the development of world-class service industries.

A striking aspect of the development of the services sector in Bangladesh is that it not only has responded well to the growing demand emerging from the growth of manufacturing and agriculture activities, it has also positioned itself well in the global market for low-skilled workers, especially to the oil-rich middle-eastern markets. As a result, there has been a rapid inflow of worker remittances that has fueled a huge demand for construction activities and for a range of services in both urban and rural areas. This inflow of remittances has played a major role in transforming the rural economy and contributing to poverty reduction.

The services sector itself is transforming. As Bangladesh transited from a low-income developing country at the time of independence in 1972 to a lower-middle-income country in 2015, the services sector has been steadily transforming from a primarily low-productivity, low-income unorganized services sector dominated by trade, transport and low-end personal services towards more organized and higher-income commercial services. In addition to the standard organized service activities provided by the public sector through public administration, defense, law and order, education and health services, the private services sector has undergone a slow but steady structural change in the form of growth of a range of modern commercial activities including banking and other financial services, shipping, Information Communications Technology (ICT), aviation, storage, tourism and hospitality services. This transformation needs to be speeded up in order to facilitate Bangladesh's journey towards a high-income economy.

Contribution of Service Sector to Exports: The services sector has been a major driver of exports. The main contributors have been the export of workers and a range of non-factor services (NFS). The trend in these sources of export earnings is illustrated in Figure 7.7. Export of workers and related remittance inflows took off in a big way after FY1990. Other service exports have also shown some upward movement, but income from remittance inflows has dwarfed the contribution from other services. Remittance inflows reached a peak of $16.42 billion in FY2019, growing by an annual average rate of 12.5% in nominal dollar terms between FY1990 and FY2015. Other service export income also grew significantly although at a more modest pace of 8% per year.

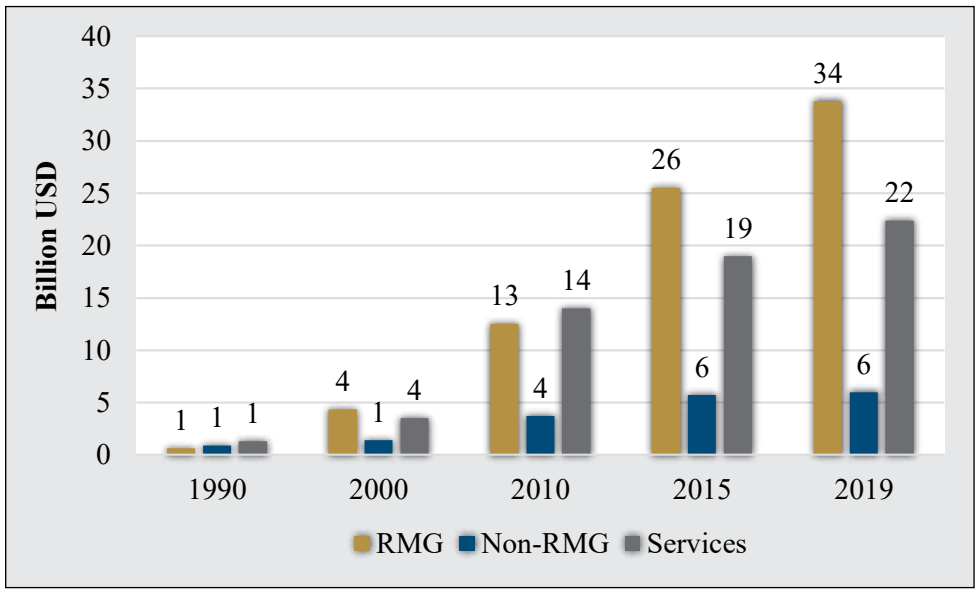
Figure 7.7: Trend in Factor and Non-Factor Service Exports



Source: Bangladesh Bank

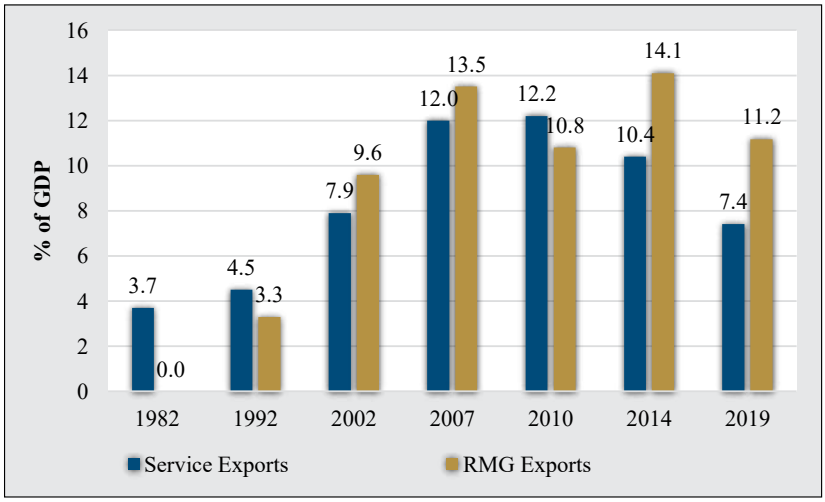
Before the emergence of ready-made garments (RMG), services were the largest source of export earnings until FY2010 (Figure 7.8). The relative role of remittances and other service earnings has fallen considerably since then, owing to a slowdown in the growth of remittance income. The services export earnings as a share of GDP fell from a peak of 12.2% in FY2010 to only 6.7% in FY2017 (Figure 7.9). Even so, they still constitute the second-largest source of export earnings after RMG, accounting for 32% of total export earnings in FY2017.

Figure 7.8: Value of Services Exports



Source: Bangladesh Bank

Figure 7.9: Earnings from Services and RMG Exports



Source: Bangladesh Bank and Bangladesh Bureau of Statistics

The solid contribution of the services sector to export earnings is self-evident. The challenge moving forward is how the recent decline in service export earnings can be reversed and its historical dynamic role preserved and further expanded, especially focused on non-factor services (NFS), including transportation, travel, telecommunication, business and government services. Unlike earnings from factor services that are largely exogenous to Bangladesh because they depend upon immigration policies of host countries, earning potential from NFS is substantial. The global market for NFS is large and Bangladesh is a relatively small player. With proper policies, it should be possible to capture a larger share on the global NFS market.

7.5.2 Challenges and Opportunities for the Service Sector

Notwithstanding the past solid performance of the service sector, there is substantial scope for further dynamizing the contribution of this sector to the development of Bangladesh, especially in terms of growth and equity. The quality and productivity of the services sector must enhance tremendously to provide the necessary growth and employment support to ensure the successful completion of the aspired journey for Bangladesh from low-middle income to upper-middle-income by FY2031 and High Income by FY2041.

There are a number of issues and challenges that need to be addressed to facilitate this journey. First, despite some progress with modernizing the services sector, it remains dominated by unorganized activities where productivity and incomes are low. Much of the workforce outside agriculture who are considered poor are engaged in these low-productivity, low-income unorganized services in rural and urban areas. Second, the skill base of the services sector, although better than in agriculture and manufacturing, is still low that largely explains the dominance of unorganized, low productivity, low-income activities. Third, while earnings from the export of labour services have done very well, the performance of export earnings from NFS is considerably below potential. Fourth, the regulatory policies and public institutions for supporting the expansion of modern services require substantial revisions and upgrading in order to fully exploit the benefits of a modern and dynamic services sector.

The structure of services sector is shown in Table 7.2. Trade is the dominant services activity, growing at a faster pace than total GDP between FY1974 and FY2010, with its share in GDP reaching 14 percent. The increasing importance of trading activities can be gauged from the fact that its GDP share in FY2017 exceeded the GDP share of agriculture and forestry combined.

Table 7.2: The Structure of Services Sector (% of GDP)

Activities	FY1974	FY1980	FY1990	FY2000	FY2010	FY2019
Trade	9.3	11.0	11.8	12.8	14.0	13.34
Transport	4.2	8.1	8.7	8.1	8.9	9.34
Telecoms	0.2	0.2	0.4	0.8	2.1	1.10
Financial Services	1.0	1.5	1.5	1.5	2.9	3.89
Real Estate	4.9	10.2	9.7	8.5	7.6	7.87
Public Administration	1.0	1.5	2.0	2.5	3.3	4.09
Education	1.6	2.1	1.9	2.1	2.2	3.02
Health	1.2	2.5	2.3	2.1	2.0	2.15
Hotels and Restaurants	0.2	0.5	0.6	0.6	0.8	1.04
Personal and Community Services	6.2	10.7	9.5	7.8	11.1	10.78
Total Services	**30.9**	**48.3**	**48.4**	**46.8**	**54.9**	**55.53**

Source: Bangladesh Bureau of Statistics

The other important source of growth in services sector is personal and community services. The expansion of personal services is the direct outcome of a buoyant Bangladeshi economy and the generous inflow of remittances. The demand for a range of personal services including chauffeurs, plumbers, shoe-repair, informal electrician, tailoring, household support staff, hairdressing, beauty salons and parlours and the like have mushroomed all over urban Bangladesh, especially in the high-income metropolitan cities of Dhaka and Chattogram. The high-income elasticity of demand for these services and plentiful supply makes this a very vibrant source of income and employment.

The third major service activity is the transport sector. Given the large network of waterways in Bangladesh, river transport serves a major development role in terms mobility of rural people and commodity flow. It can also be a dynamic source of employment and poverty reduction for the rural poor. With the growing congestion of road network and the limited capacity of rail cargo services, water transport provides a huge, environmental-friendly alternative that has been by-passed.

Regarding air transport, the main constraint is the weak performance of the national carrier Bangladesh Biman. The demand for air transport has swelled at both the international and domestic level. Yet, the capacity constraints of the national carrier Bangladesh Biman are severe. As a result, it has not been able to benefit much from the large growth in the demand for both international and domestic travel. High-performing international carriers, especially Emirates, Etihad and Qatar Airways, have captured the bulk of the market share of international travel to and from Bangladesh.

The low value-added of education and health services despite growth of these services is a worrisome development. The inadequacy of tertiary education in science and technology area is emerging as a major constraint to the expansion of quality manufacturing and high-value-added service exports. In the area of health, the absence of modern health financing options, such as health insurance, is an important constraint to the more rapid expansion of higher-value health services.

One major service industry not directly reflected in the service sector value-added is the role of tourism. While the international travel-related effects of tourism are captured through the travel receipts in the service account of the balance of payments, other aspects of tourism linked hospitality services and domestic transport are captured in transport, hotels and restaurants. Additionally, there are large indirect effects linked to tourist spending on travel, hotels, food, and purchases of other local goods and services. Research shows that the multiplier effects of tourism can be large as reflected in the role of tourism in such economies as Thailand and Malaysia.

Apart from the specific need to expand the contribution of high-potential services in the economy, there is a more general challenge of increasing the productivity of services activities. Professional and skill-intensive services such as banking, finance, ICT, healthcare, education, shipping and aviation tend to be high productivity, high-income activities. As noted above, the role of these activities is still limited despite recent growth. Other services like trade, transport and personal services have done well but generally, they tend to be dominated by low productivity, low skills and unorganized activities.

The services sector played a solid role in enabling Bangladesh to secure low-middle income country status. An even stronger performance will be needed to help Bangladesh achieve high-income status by FY2041. As noted, there is tremendous scope for further improvement, especially in the area of export of non-labour services, in tourism, in ICT and in modernizing trade, transport, health and education services.

7.6 Employment Generation Policies for a Maturing Economy

The outcome of growth in terms of employment is critical in order to ensure that the fruits of economic growth get distributed amongst the people. Since productive employment plays an important role in transmitting the benefits of economic growth into incomes of the poor (and thus, in reducing poverty and improving the distribution of income), it is important to examine the nature and magnitude of the employment challenge faced by the country and to chart out strategies and policies addressing the challenge.

7.6.1 Employment Projection and Prospects

For purposes of looking at the future in terms of employment prospects and challenges, the period up to 2041 may be divided into two broad phases: the first phase is expected to last till 2031 while the second phase is expected to start after 2031. 2030 represents the terminal year for attaining the SDGs of **which full and productive employment** is one. Attaining this target for the economy of Bangladesh would imply that surplus labour available in the country would be exhausted by then. Growth of employment that would be required to attain that turning point has been projected by using the PP2041 stipulations of GDP growth and the relationship between output and employment growth.

The second phase of the employment challenge would start after the turning point has been attained which is expected to be by 2031. By then, the economy is expected to move to the stage of upper-middle-income and on the path towards higher-income status. The employment challenge for that period (i.e., 2031 to 2041) is analysed in both quantitative and qualitative terms.

Assuming that labour force will grow at a rate of 2.28 per cent per annum, and more than half a million workers will find jobs overseas annually, full absorption of surplus labour by 2031 will entail the creation of 1.93 million jobs annually during the period of 2015-16 to 2030-31 to absorb the new additions to the labour force. The elasticity of employment will have to be about 0.3 in order to attain the employment target with an average annual growth rate of 8.5 per cent as projected under PP2041. In real terms, the above would imply that the manufacturing sector will play the role of the real driver of growth with output growth of around 15 per cent per annum and employment growth in the range of 9 per cent per annum. Given the experience of the successful cases of labour-intensive industrialization in East and South East Asia, this should be feasible. The requirement, of course, is a diversification in the composition of the manufacturing sector and much faster growth of a few more labour-intensive industries like shoes (both leather and non-leather), leather products, jute goods, electronics, furniture, etc. – of course, alongside ready-made garments.

During the second phase, i.e., 2031 to 2041, growth of labour force will decline further. Assuming a labour force growth of 1.5 per cent per annum (which is based on the recent experience) and using 85.2 million as the base figure for 2031, estimated labour force for 2041 is 100.36 million. That would imply an annual addition of 1.38 million from 2031 to 2041. As of 2019, Bureau of Manpower, Employment and Training (BMET) estimates that roughly 1% of the labour force (0.7 million) is now employed overseas each year. This indicates an annual domestic job placement requirement of about one million.

If a GDP growth of 9 per cent per annum can be attained (PP2041 projections), and employment elasticity does not drop below 0.2, the economy would be able to generate around 1.7 million jobs annually (against a requirement of about one million). If that happens, the economy will face a labour shortage. In reality, even when the economy matures, employment elasticity may remain well above 0.2 (possibly in the range of 0.3). In that case, the labour market is likely to become even tighter. These estimates indicate that it should be possible to maintain full employment with a GDP growth of around 8 per cent per annum. Thus, even with some setbacks in growth or its job creation potential, near full employment economy may be assured during the second decade of PP2041.

7.6.2 Towards an Employment Strategy

A long-term strategy for employment-intensive growth will consist of the following components: While developing a long-term employment strategy for any country can be a challenging task, it is more so for a developing country like Bangladesh which is going to experience phases of transition during the period. Bangladesh is expected to attain the critical turning point of exhausting surplus labour and move into a regime of tight labour market which is characteristic of typical developed countries. Hence an employment strategy has to reflect this transition. During the phase of continued surplus labour, a major focus has to be on structural transformation and high growth of employment in sectors characterized by higher labour productivity. During the subsequent phase, employment growth will remain important so that open unemployment does not start increasing. Moreover, since economic growth in a mature economy is likely to be lower than in the earlier phase of development, it would be important to ensure that growth does not become jobless - a phenomenon experienced by many developed countries at different times.

Secondly, the labour market of Bangladesh is characterized by a very high proportion of employment in the informal sector and the informal economy. Although the type and quality of jobs in this part of the economy vary considerably, such jobs are typically characterized by low productivity and earnings and absence of any social protection. And these are characteristics that are inconsistent with a developed country status. Hence a strategy has to be developed vis-à-vis the informal segment of the economy.

Third, and an issue related to the above is that of quality of jobs in terms not only of productivity and returns/income, but also in terms of access to social protection, the environment in which work is carried out, and the ability of workers to express their voice in their places of work.

Fourth, from the point of view of the supply side of the labour market, attention will have to be given to education and skill characteristics of the workforce. In that context, it would be necessary to think of the requirements of the labour market at different stages of development. At the early stage of development of the country, primary and secondary education may have been adequate for most jobs in the economy. However, once the country moves from the stage of comparative advantage based on abundant labour available at low cost to one based on skills and productivity, it will be necessary to ensure the supply of higher-level human capital rather than workers with cognitive skills alone. Hence, the strategy for developing human capital will have to be based on the changing requirements of an economy which will experience critical transformation.

Fifth, at a higher level of development - when the labour market will have utilized the available surplus labour - the nature of the employment challenge is going to change. At that stage, matching of available jobs with those seeking jobs will become more important, and a large part of unemployment will be due to churning in the labour market (what is typically known as "frictional unemployment"). In such a situation, institutional arrangement for employment services will become more important than at present. But that arrangement has to be put in place now.

The issue of technological progress and the prospect of automation under Industry 4.0 will also have to be taken into account in formulating a longer-term employment strategy. However, rather than taking a pessimistic view of the danger of job destruction, it would be advisable to adopt a pro-active policy so that the economy can benefit from the positive aspects of new and better jobs.

Informal sector: As for the informal sector, there are three aspects that need attention: (i) productivity, wages and earnings, (ii) obstacles and barriers faced by the informal sector enterprises, and (iii) conditions of work and social protection. During the first phase of labour absorption, more emphasis will have to be given to the first two issues, though the third should not be neglected altogether. However, as the economy attains the upper-middle-income status, the quality of jobs with respect to conditions in which work is carried out and social protection of workers will have to reach a level that is commensurate with its income status. And work in that direction has to be initiated now. A beginning can be made with innovative measures for protection against ill health and old age.

Youth employment: Although the employment challenge needs to be addressed in a general manner, the youth deserve specific attention for a variety of reasons. A notable demographic feature in our

country is the rapid rise in the youth labour force. Youth are typically savvier in digital applications and innovation. Growth of youth labour force in a country is considered to be indicative of a potential for demographic dividend and can be a positive factor in attaining economic growth. – if of course the youth (people of working age) could be converted to human capital and employed in an effective manner for productive purposes, the difficulties faced by the youth in accessing their first job and in becoming self-employed need to be addressed. Other serious problems include the mismatch between skills obtained in the world of learning and those required in the world of work. Experience, especially of countries with lower youth unemployment indicates the importance of carefully calibrating the education and skill development system to the needs of the labour market, a strong apprenticeship system, packaging entrepreneurship development programmes with credit and marketing support, and labour market intermediation to match job-seekers and employers. Special employment programmes may also be conceived for the youth by drawing on ideas from public works programmes but changing the types of jobs to suit the qualifications of job-seekers. It would be useful to package all such measures through what is known as active labour market policies (ALMPs). This class of measures would become more important as the economy matures, but a beginning has to be made now.

The long-term goal will be to develop the nation's youth - both male and female - into a skilled workforce. Youths will be trained for skill development under TVET with a certainty of employment. In order to facilitate necessary supports to the grassroots youth and women, Recruiting agent and District Employment & Manpower Office (DEMO) will be introduced in each district of Bangladesh, with priority assigned to lagging districts.

Women employment: As for the employment of women, the challenge at the present stage of the economy remains one of raising the rate of their participation in the labour force which, in turn, would need a combination of measures ranging from promoting the growth of sectors that are more amenable to their employment (e.g., labour-intensive industries like garments, shoes, electronics, etc.) to removing barriers to their employment and establishing infrastructure to facilitate their employment. In addition to activities that are women-friendly, there are variables that influence female participation in the labour force; they include education, fertility rate, affirmative action and direct intervention, and other measures like maternity leave. According to a World Bank study, raising female labour force participation rate from the current 33% to 45% will raise GDP growth by an extra percentage point.

7.6.3 Strategy for Developing Human Capital

A comprehensive strategy for developing human capital has to be part of the overall development strategy as well as the employment strategy because human capital is not only an important element in the growth equation but employability would be an important determinant of the success of the employment strategy. Bangladesh has already made important strides in this field as an LDC. However, as the economy moves to the upper-middle-income status, it would be necessary to focus on the more difficult aspects of human capital development, viz., combining good quality general education that is not only relevant for the labour market but also can lay the foundation for further skill development with technical and vocational education. During the first phase of the employment

challenge mentioned earlier, the emphasis now has to be on improving the quality at all levels and types, and further expansion of secondary and technical education. At the same time, the tertiary education system has to gear itself to meet the requirements of a knowledge-based economy where both mechanical and information and communication technology will be on high demand. While it is not practical to make quantitative projections of the requirement of human resources with such education and skills, the experience of countries that have gone (and are going) through similar paths of growth can provide a useful guide.

7.6.4 Technological Change, Automation and Implications for Employment in Bangladesh

The world is currently witnessing the fourth industrial revolution, the basic characteristics of which include the use of robots, artificial intelligence, nanotechnology, and biotechnology. A common perception in that respect is that this is going to threaten the employment of human beings. Even in Bangladesh, where the economy is still characterized by the existence of surplus labour, robots are making inroads. And if one takes a long term perspective of several decades from now, one could imagine the following scenarios: (i) in factories producing textiles, garments, shoes, etc., instead of human beings, robots are performing major tasks, (ii) instead of the numerous retail stores of different types, there are only huge stores where robots arrange merchandise on shelves, customers pick up their needed items and go out through automated check-out points, (iii) online retailers have replaced most of the retail stores and their warehouses are run primarily by robots, and so on.

What kind of scenario can be expected for Bangladesh if one takes a long-term perspective like the middle of this century? In addressing this question, it might be useful to refer to the so-called "flying geese model" of development where one lead goose is followed by a few more flying in formation and comparative advantage in the production and export of labour-intensive industrial goods shifts from one group of countries to another. In the original version of the model, Japan was the lead goose who was followed by countries like South Korea, Taiwan, and Singapore in the second tier and with Malaysia, Indonesia and Thailand completing the formation. That model could be extended to include China in the second tier and countries like Viet Nam and Bangladesh following the third-tier countries.

Emerging economies like Bangladesh with a younger population may have to worry about generating new jobs in an age of automation, and points out the possibility that automation could upend some prevailing models of development. This is because low-cost labour may lose some of its edge as an essential development tool for such economies. In fact, automation depends on a variety of factors – technical, economic and social; and it is difficult to predict how the relevant factors will unfold in a particular country. But the past experience and the present situation of a country can provide useful insights.

Considering the factors and questions mentioned above, it is possible to identify opportunities that a country like Bangladesh could have as well as concerns, threats, and challenges it could face. They are outlined in Table 7.3.

Table 7.3: Impact of Automation on Employment: Opportunities, Concerns and Challenges for Bangladesh

Opportunities	Dangers/Concerns	Challenges
• When surplus unskilled labour is exhausted, selective automation can help overcome the constraint created by shortage of labour. • New jobs, e.g., in supervision, repairs and maintenance, can be associated with automation. • New technology, by raising overall productivity and efficiency, may make it possible to lower prices of products. That could result in a rise in demand and hence in output and employment. • Increase in labour productivity can create a necessary condition for a rise in wages, which in turn could augment demand, output and employment. • Automation can reduce drudgery of work in certain lines. • Automation can bring about positive change in the structure of the economy towards sectors and activities characterized by higher productivity and incomes.	• Ill conceived policies like artificially lowering prices of machines through fiscal measures may lead to premature automation and thus to job losses even before surplus labour is exhausted. • By reducing costs, automation may give competitive edge to countries at higher levels of development – thus jeopardising the export-led development efforts of Bangladesh. • Competition in the international market may tempt the government to adopt such policies mentioned above. • Competition may also lead enterprises who are capable of adopting automation to go for it – resulting in adverse effect on employment. • While demand for skilled workers increases, unskilled workers may face problems. This may lead to faster increases in wages of workers in the former category and accentuate the trend of rising income inequality.	• Designing appropriate macroeconomic policies taking due account of the country's economic and labour market situation. • Designing policies to ensure that automation does not lead to exclusion of certain enterprises. • Designing policies for education and skill development in a way that the country can adjust smoothly to new technologies.

In keeping with the long-term strategies for high growth, trade and industrial modernization in the context of a digital and globalized world of the future, there has to be an integrated approach to employment generation over the two decades of the Perspective Plan. It would be essential for the integrated employment strategy to combine the necessary economic and labour market policies. The starting off point for such a policy has to be macroeconomic policies which would have to look beyond their conventional function of maintaining macroeconomic stability and give due consideration to what happens on the employment front. Coordinated application of monetary, fiscal, trade, exchange rate, and industrial policies then becomes critical for attaining high rates of economic and employment growth.

During the journey towards attaining the status of a developed and mature economy, policymakers will also have to confront the challenges of technological progress and its impact on the labour market. The education and training system will have to gear itself to meeting such challenges so that the economy, as well as members of the workforce, can benefit from the positive aspects rather than fall victim to forces of job destruction.

7.6.5 Going Forward

The future of the world economy, trade and industry, is going to be digital. Bangladesh will have to be transformed into a digital economy with industry and services rapidly adopting the technological advances taking place around the globe. That calls for heavy investment in education and skill development as the economy moves into UMIC status. There is no scope for missing the bus. It has

been made clear in this Plan that falling behind in making this investment in human capital will rob the country of its potential attainment of HIC status by 2041.

Development economists have often referred to Bangladesh as a poster-child of development leaving behind the sobriquet of a "basket case". With all the technological breakthroughs and churning that will take place over the next 20 years, Bangladesh could indeed pull another surprise and join the ranks of HIC in the 2040s propelled by high growth in the 2020s and 2030s.

High growth is possible. According to Nobel Laureate Michael Spence, from ancient to modern times, the global flow of goods and services has never been static. It is now possible for countries to grow at 7, 8, 9, and 10 percent annually because of the enabling effect of the global economy. That is, economies can grow as fast as they can invest, provided they have some competitive edge. Bangladesh has proven its competitive edge in labour-intensive products, which will remain the basis of its global competitive advantage for the next decade before knowledge and skill-intensive growth takes over. Bangladesh will thus have to start now for achieving that transformation in competitive advantage.

These are some of the transformations that will be taking place as the economy moves up the income ladder:

- ***Structural change:*** the share of industry in GDP, at 33% in 2020, is expected to reach 40% in 2031, and then decline to 33% by 2041; services at 54% of GDP in 2020 will be rising to become the dominant part of the economy reaching 62% of GDP by 2041. Agriculture, like in most developed economies, will shrink to only 5% of GDP by 2041 .
- ***Fourth Industrial Revolution:*** Bangladesh will need to play catch up and adopt the technological transformations of Industry 4.0 (IoT, 3D printing, AI, etc.) in order to remain a global player in RMG and other potential exports.
- ***New Wave of Globalization:*** just as globalization created opportunities for Bangladesh to break into world markets for manufactures, it must remain fully prepared to embrace the new wave of globalization, seize emerging opportunities, and take on future challenges. That remains the only option for Bangladesh to become a highly industrialized economy of the future.
- ***Future challenge of competitiveness:*** In the unfolding industrial universe of the future, Bangladeshi firms will face the stark reality that competitive advantage founded on low labour cost cannot be guaranteed for all time. Competitive advantage is dynamic and will be evolving. From its current phase of factor-driven competitive advantage, Bangladeshi firms will have to move into investment and innovation driven competitive advantage (a la Porter). Without such efforts, entrepreneurs need to be warned that the current competitive advantage in labour-intensive garment exports could well be lost in future.
- ***Lessons from East Asian economies*** (Korea, Taiwan, Malaysia, Thailand): all of these high performing economies that eventually crossed the high-income threshold acquired the following characteristics: macroeconomic stability, high shares of trade in GDP,

heavy investment in people (skills development), and strong competition among firms. Bangladesh already has some of these characteristics and will have to focus on acquiring the rest, especially on investment in people and skill development.

- ***Trade openness and reliance on external markets:*** The experience of the high-performing East Asian economies clearly demonstrates the criticality of export-oriented trade policy for superior export performance. Ensuring export competitiveness in the global marketplace must be a key export strategy for all times and access to world-price inputs must be ensured. The speed of Bangladesh's industrialization with job creation will depend on how well the economy is integrated with the global economy, with well-heeled policies to capture external markets while removing distorted incentives in domestic markets.

- ***Exploiting Global Value Chains and courting FDI:*** The fragmentation of production processes across different countries has given rise to global value chains (GVCs) creating opportunities for intra-industry trade globally, especially giving a boost to trade in intermediate goods. But the technical 'know-how' needed for the production of an intermediate good in the GVC must be obtained since Bangladeshi entrepreneurs are not exposed to such expertise. That justifies the critical need for foreign direct investment, and policymakers must mitigate any constraints that undermine the prospects of FDI. Not only in the production of intermediate goods, courting FDI will be essential for future technology leapfrogging to capture production and market access in manufacturing products of the coming decades.

- ***Addressing challenges and seizing opportunities from technological change:*** The economy will have to adjust itself to technological progress and new technologies. As the global society embraces the fourth industrial revolution, Bangladesh will also have to take steps to ensure that it does not miss the benefits of technological progress. The education and training system will have to gear itself towards meeting the challenges of a knowledge- and technology-based economy.

- ***Strengthening institutions for trade and industry:*** Historical research finds conclusive evidence that inclusiveness of political and economic institutions is critical for sustained prosperity. Bangladesh is on way to building the kind of institutions that yield prosperity for the long-term. The next decade will be crucial for strengthening economic institutions that will help entrepreneurs seize market opportunities emerging in a fast-changing global economy driven by innovation and creative destruction *(a la Schumpeter, 1942)*[11].

11 The expression **"creative destruction"** was popularized by and is most associated with Joseph **Schumpeter,** particularly in his book Capitalism, Socialism and Democracy, first published in 1942.

CHAPTER 8

SUSTAINABLE POWER AND ENERGY FOR A HIGH-INCOME COUNTRY

SUSTAINABLE POWER AND ENERGY FOR A HIGH-INCOME COUNTRY

8.1 Overview

In 2009 Bangladesh faced a severe energy crisis owing to sluggish growth in energy supplies while the demand for energy was growing owing to higher GDP growth. The situation called for an urgent but well-crafted sustainable long-term strategy to address the energy crisis and increase the energy supply to support achieve Bangladesh's development objectives as conceived in PP2021. Accordingly, the Government of Bangladesh adopted a comprehensive energy development strategy. The strategy sought to provide a balanced approach that looked at both supply increases and demand management aspects of the energy market on a long-term horizon. Energy options from domestic sources needed to be complemented with possible options for energy trade. Specifically, the strategy sought to address what the government could do to strengthen the supply of gas and power and look at options for diversification of fuels for power generation. The strategy also involved exploring alternative solutions such as increased electricity imports from neighbouring countries, imported coal and liquid fuel based power generation and LNG trade. Furthermore, exploration of domestically available resources, such as coal, oil and gas from offshore drilling were to be intensified. The supply-side options were to be balanced with policies for demand management that conserve energy and discourage inefficient use of energy.

The implementation of this power and energy sector strategy under PP2021 has achieved considerable success, especially in terms of power generation, that lays the foundations for further progress during PP2041. But there is also an unfinished agenda in terms of energy mix, energy pricing and financing, and energy efficiency. Moreover, the GDP growth will further accelerate and urbanization will intensify during 2041 as Bangladesh seeks to reach high-income status. Demand for electricity and primary fuel will accelerate. The power and energy developments also have implications for climate change and environmental management through the link between energy and carbon emission. Reconciling the demand for higher energy with low carbon emission will require a reduction in the share of fossil fuel consumption and increased reliance on clean technology and renewable energy. Bangladesh is an energy importing country and higher demand will put pressure on the balance of payments and the budget. Efficient use of energy resources and their proper pricing will, therefore, assume greater significance.

8.2 Progress under PP2021

The key objectives and targets of PP2021 for the power and energy sector are shown in Table 8.1. Fundamentally, PP2021 sought to secure a major expansion in the supply of power to facilitate GDP growth while improving efficiency, increasing private participation and diversifying energy sources. Against these objectives and targets, Table 8.2 shows the progress with energy security and efficiency. Some impressive progress has been made in increasing power supply, growing at an average annual pace of 14% per year between 2010 and 2019 that is unprecedented in the history of Bangladesh. Grid based installed power generation capacity was 5823 MW in 2010 which was raised to 18,961 MW in 2019 which is a laudable achievement that puts Bangladesh on course to come very close to the 2021 target for generation. Commensurately, progress was also made in

transmission and distribution services that helped to connect people to electricity in both urban and rural areas. Thus, access to electricity reached 95% in 2019. If the present pace of connection is sustained, it is expected that connectivity will reach at 100% level by 2021. The progress remains truly remarkable given that less than 50% of the people had electricity only 8 years ago.

Table 8.1: Key Objectives and Targets of PP2021 for the Power and Energy Sector

Key Objectives	Targets 2021
Ensure energy security through diversification and trade.	*Electricity generation: 20,000 MW*
Make the power sector financially viable and able to facilitate economic growth.	*Connectivity: Electricity for all by 2021*
Increase the sector's efficiency.	*Fuel mix in power: Gas: 30%; fuel oil: 3%; coal 53%; nuclear 10%; hydro: 1%; renewable 3%*
Introduce a new corporate culture in the power sector entities.	
Improve the reliability and quality of electricity supply.	
Use natural gas and coal as primary fuels for electricity.	
Increase private sector participation to mobilise finance.	
Ensure a reasonable and affordable price for electricity by pursuing least-cost options.	
Promote competition among various entities.	

Source: Perspective Plan 2021

Progress with increasing private sector participation in power generation so far is encouraging. Private sector investment in the power sector has increased steadily enabling private sector power generation to rise from 2104 MW in FY2010 to 9454 MW in FY2019, including power import, which is an annual growth of 18.17% per year. The ability to encourage private financing and supply of power is a major policy success for the power sector under the PP2021. Continued progress with private power in the remaining two years of FY2019-FY2021 will be instrumental in securing the power generation target of 20,000 MW in FY2021.

Regarding energy diversification, progress is mixed. On the positive side, good progress has been made in securing energy trade agreements with India. As a result, imports of power have gone up from zero in FY2010 to 1160MW in FY2019. This is a good sign and opens up prospects for more and better energy trade with India and other neighbours including Bhutan and Nepal.

The policy debacle has been the inability to adopt a comprehensive coal policy that has virtually stopped domestic coal extraction. Imports of coal are underway to support the expansion of coal-based power plants. But so far coal accounts for only 3% of power generation as compared with the target of 53% under PP2021. According to on-going generation plan, the share of coal in power generation capacity will be increased in upcoming years. As per this plan, regarding Roopur Nuclear Power Plant, it is envisaged that it will start generating power by 2023. Regarding renewable energy, progress has been slow. On-grid some 80MW of solar power has been added between FY2010 and FY2018. Off-grid, a total of 334 MW of renewable energy, primarily solar-based, has been added over the same period. Overall, the share of total non-hydro renewable energy-based power has increased at 2.8%. So, the share of 3% renewable energy by FY2021 will be achieved.

Table 8.2: Power and Energy Sector Performance under PP2021

Objectives/Performance indicators	FY2010 (baseline)	FY2019(achievement)	FY2021 (target)
Make power sector financially viable	subsidy Tk. 6.36 billion	subsidy Tk. 75 billion	As per 7th Five Year plan
Total grid-based installed generation capacity of electricity	5,823 MW	18,961MW	20, 000 MW
Increase efficiency of energy use as well as reducing the system loss	15.73% T&D loss	11.96% T&D loss	10%
Diversify fuel use in power generation, i.e. from gas to coal, liquid fuel (installed capacity grid based)	84% gas; 8% liquid fuel; 4% coal; 4% Others	57.4% gas; 32.4% liquid fuel; 2.8% coal; 6% power import, 1.4% others	30% gas; 3% liquid fuel; 53% coal; 14% others.
Increase private sector investments in electricity, gas, and other energy supply	About 36% of installed power generation capacity	About 50 % of installed power generation capacity (including imports)	No quantitative target
Encourage energy trade	0 MW	1160 MW	No specific target
Access to electricity	48%	72%	100%

Source: Bangladesh Power Development Board, Bangladesh Economic Review, Seventh Plan and PP2021.

The heavy reliance of PP2021 power generation strategy on fossil fuel is a matter of concern that needs to be revisited in view of Bangladesh's commitment to contain the growth of carbon emission. Data show that the rate of growth of carbon emission is the highest from the power sector, growing at 9.2% per year between 2004 and 2016. To reduce CO2 emission, initiatives are being taken for replacing old inefficient gas based power plants with high efficient new combined cycle power plants, coal based super critical and ultra-super critical power plants as well as renewable based power generation.

Regarding energy efficiency, there is a target of 15% reduction of primary energy consumption by 2021, 20% by 2031 and 25% by 2041 per GDP for demand-side but on the supply side, progress in reducing transmission and distribution (T&D) losses has been steady, falling from 15.73% in FY2010 to 11.96% in FY2019. Due to retirement of old inefficient power plants, new high efficient machines being added to the system and proper maintenance of existing power plants, the power station auxiliary consumption is reducing from 5.82% in FY2010 to 4.39% in FY2019. This is a solid performance. On the financing side, the power sector has made good progress in improving billing and collections. Power pricing has also improved considerably with frequent price adjustments awarded by the regulatory body, Bangladesh Electricity Regulatory Commission (BERC). Nevertheless, gas shortages and growing reliance on liquid fuel have continued to increase the cost of power generation faster than the increase in average selling prices. So, financial subsidies have continued and the objective to achieve financial viability has not yet been met.

To summarize, the PP2021 strategy focused mostly on the expansion of power as it had become a major constraint on growth and private investment. With solid progress on power expansion, the strategy in PP2041 will emphasize relatively more on cost reduction and renewable energy.

8.3 PP2041 Vision for Power and Energy

The PP2041 Vision for power and energy seeks to build on the successes of PP2021 and put Bangladesh forward on to the path of a high-income economy. Commensurate with the energy situation in a high-income economy, the 2041 Vision for power and energy consists of the following.

- Develop a power and energy sector that meets the energy needs of an upper-middle-income and high-income economy.
- Ensure sustained access for all to electricity irrespective of location and availability of other energy sources.
- Meet the demand for electricity and other energy with efficiency and at prices that maintains global competitiveness.
- Ensure 100% energy security with a balanced combination of efficient domestic supply with competitively-priced power imports and exports from regional neighbours including India, Nepal and Bhutan and primary energy from the rest of the world.
- Develop an energy strategy that ensures the consistency of energy production and supply with environmental protection.
- Develop pipeline network throughout the country for transportation of petroleum products in a faster, safer, easier and environment-friendly manner.

8.4 Objectives and Targets for Power and Energy under PP2041

The objectives and targets for the power and energy sector that translates the Vision PP2041 into actionable and measurable indicators are shown in Table 8.3. Projections show that the demand for power will grow by 9.3% during FY2021-FY2041 owing to the projected acceleration of GDP growth to 9% per year[12]. A core objective of the PP2041 power and energy strategy would be to meet the new demand. This large long-term expansion in the demand for power and energy will require considerable investment based on least-cost options, a phasing away of high-cost liquid fuel based power plants, and flexible management of primary fuel at the lowest possible cost to produce electricity while also paying attention to minimizing the carbon impact. Accordingly, the fuel mix will need to change from excessive reliance on fossil fuel towards a balanced combination of low-cost fuel and renewable energy. More use of imported hydro and solar power from India, Nepal and Bhutan will help mitigate the domestic pressure on power production while also lowering carbon emission. On the financing side, a core objective is to ensure the financial sustainability of the power sector so that the power sector earns a reasonable rate of return on assets as is common in upper-middle-income and high-income countries. The BERC declares the tariff. The average bulk supply tariff of electricity is less than the average cost of bulk supply. The resulting financial losses have created pressure on the national budget. BPDB has received budgetary support/loan from Government due to loss between bulk supply cost and bulk supply tariff. Thus, the electricity budgetary support increased from Taka 10 billion in FY2010 to Taka 75 billion in FY2019 (Annex 8A).

12 Details of underlying assumptions about income elasticity for the demand projections are provided in "Ahsan Mansur. Power Sector Strategy for the Perspective Plan," Background Paper prepared for PP2041.

Table 8.3: Key Objectives and Targets for Power and Energy Under PP2041

Objectives/Performance Indicators	FY2019 (Actual)	FY2021 (Target)	FY2031 (Target)	FY2041 (Target)
Make power sector financially viable	Losses amounting Tk. 75 billion			
Total grid based generation capacity of electricity	18,961 MW	21,369 MW	33,000 MW	56,734 MW
Maximum Peak Demand Based on PSMP 2016 base case	12,893 MW	14,500 MW	29,300 MW	51,000 MW
Increase efficiency of energy use as well as reducing the system loss (T&D loss)	11.96% (T&D losses)			T&D loss target: Single digit
Diversify fuel use in power generation capacity to balance use of low-cost fuel with low carbon content of the fuel mix	57.4% gas; 32.4% liquid fuel; 2.8% coal; 6% power import;1.2% hydro 0.2% % renewables	45% gas; 27% coal; 17% liquid fuel; 9% power import;1% hydro	29% gas; 30% coal; 14% nuclear; 9% liquid fuel, 17% power import, 1% hydro	35% gas; 35% coal; 12% nuclear; 16% power import;1% liquid fuel; 1% hydro
Increase private sector investments in electricity, gas, and other energy supply	50% including imports	50%	55%	60%
Encourage energy trade	1160 MW	2,000 MW	5,000 MW	9000 MW
Access to electricity	72%	100%	100%	100%
Installation of petroleum pipeline	0 km	451 km	1077 km	1177 km
Installed processing capacity of refinery	1.5 million tons	1.5 million tons	19.5 million tons	19.5 million tons

Source PP2041 Projections as of PSMP 2016

8.5 PP2041 Strategy and Policies for Power and Energy Sector

The objectives and targets set for PP2041 will put Bangladesh power and energy sector on a sustained path for a high-income economy. The main elements of the underlying strategies and policies are as follows:

Adopt a least-cost power generation expansion path: Bangladesh already has considerable experience with developing a Power System Master Plan (PSMP). After formation of BPDB (PO 59, 1972), the first PSMP was prepared and adopted in 1985 and updated in 1995, 2006, 2010 and 2016. The PSMP is a long-term plan that provides a strategy for power expansion and associated mix of primary fuel, private sector role, power trade, power efficiency and pricing strategy. Although a long-term plan, PSMP is updated on a 5-year cycle based on the lessons of implementation of the previous 5 years. The 2010 PSMP was updated in 2016. The 2016 PSMP was used to develop some of the objectives and targets identified in Table 8.3, with appropriate modifications for the PP2041 macroeconomic framework. When the 2010 PSMP was adopted, there was a strong reliance on high-cost rental power. In 2009 and 2010, for short term emergency demand mitigation, high cost liquid fuel based power plant projects were taken due to gas shortage. PSMP-2010 incorporated 50% power generation capacity of coal based, 25% of gas based and others 25% by 2030. The 2016 PSMP underscores the importance of moving towards a least-cost power expansion by phasing away rental power plants and adopting large-scale and low-cost fuel options. The PP2041 will develop a power expansion strategy in line with the 2016 PSMP and update this strategy every 5 years based on the lessons of experience.

Promote supply of low-cost primary energy: Adoption of least-cost power expansion path requires the adoption of low-cost energy options. Hydro, natural gas, coal and nuclear are all a part of the low-cost expansion path. Liquid fuels (furnace oil and diesel) are expensive and their use will be minimized over the longer-term, as low-cost fuels are available. Bangladesh has been endowed with good reserve of natural gas. This has served the country well, although the supply based on existing known reserves is rapidly declining. Along with better pricing and demand management policies for efficient use of natural gas, efforts will continue to discover new fields in partnership with international oil companies.

At the same time, a long-term strategy has been developed in the context of the PSMP to import liquified natural gas (LNG). Implementation of the LNG strategy is underway. Two FSRUs (Floating Storage and Re-gasification Units) having storage capacity of 1,38,000 cubic meter LNG have already been installed. The re-gasification capacity of each FSRU is 500 MM scfd. The first FSRU with a processing capacity of 3.75 million tons a year was installed by US based Excelerate Energy Bangladesh Limited (EEBL) and it has already come into operation in August 2018. The second FSRU, with similar capacity, was installed by Summit LNG Terminal Co. Ltd. and was commissioned in April 2019. Both FSRUs are in the Bay of Bengal near Moheshkhali, Cox's Bazar. Petrobangla has also a plan to set up an onshore LNG Terminal with a capacity of 7.5 million tons a year having an expansion provision up to 15 million tons a year. Bangladesh has already signed a long term (15 Years) LNG Sales Purchase Agreement (SPA) with Ras-Laffan Natural Gas Company Limited (3), Qatar to supply 1.8 to 2.5 MTPA of LNG. Another long term (10 Years) SPA has been signed with Oman Trading International (OTI), Oman to supply 0.5 to 1.0 MTPA of LNG. Beside this, signing of Master Sales Purchase Agreements (MSPA) with shortlisted suppliers/traders is underway. PP2041 will monitor progress with LNG expansion program and update strategy as necessary in the context of the PSMP.

Relative to LNG and liquid fuels (furnace oil and diesel), coal offers a lower-cost power expansion path and is a key element of the PSMP. The main challenge is to safeguard against its potential negative impact on the environment through the adoption of proper technology and monitoring. At present, ultra-supercritical technology is being used in this regard. About 7,962 million metric tons of coal resources have been discovered so far in five coal fields in Bangladesh. At present, about 1 million metric tons of coal is being produced annually from the only coal mine at Barapukuria, Dinajpur. Besides, a study project is going on to develop another underground coal mine at Dighipara, Dinajpur with a target production of 3 million tons per year. To meet up the coal demand for power generation from domestic sources, Petrobangla has a plan to develop other two coal fields at Jamalganj and Khalaspir by the year 2041. Development of already discovered coal field requires a large initial investment, which will yield a high return in future. On the other hand, the use of imported coal requires heavy investments in port, storage and transport infrastructure. So, a phased approach will be used. Several programs are underway, like the Rampal Power Project using imported coal, and the Matarbari Coal Transhipment Terminal (CTT). Lessons and experience with these initiatives will be used to develop the coal strategy under PP2041.

Nuclear power is envisaged to take a bigger role in the power supply mix over the longer term. The government has put the Nuclear Power Project at Rooppur under its fast track project list for speedy

progress on this front. Agreements have been signed with the Russian Federation for installing 2400 MW nuclear power project in Bangladesh. The government has already held discussions with the international nuclear oversight organization on matters related to safety and safe disposal of nuclear waste. In developing the nuclear power option, the PP2041 will carefully review experience with nuclear power to ensure internationally acceptable levels of operation and safety standards.

Globally, renewable energy based on solar power and wind is becoming a major source of power generation. The related technology is becoming more affordable. Increasingly, in addition to being environment-friendly, renewable energy will become a part of the financially low-cost option. Bangladesh has put considerable emphasis on the development of renewable energy during PP2021. It adopted a comprehensive renewable energy policy in 2009. It also established the Sustainable and Renewable Energy Development Authority (SREDA) in 2012. The PP2041 will put a strong emphasis on the development of renewable energy. It will substantially revise and strengthen the 2009 renewable energy policy and SREDA in light of the lessons of past experience, including proper pricing of all fossil fuel (fuel oil, coal and gas). Incentive programs will be developed to encourage private investment in renewable energy and to encourage households for the adoption of clean energy technology. Also several options will be explored to increase the share of renewable energy such as off-shore wind, tidal energy, waste to energy etc.

Develop the required infrastructure for primary fuel: Both LNG and imported coal are heavily infrastructure-dependent fuel options. Major investments are needed in ports, storage facilities, rail and road infrastructure to connect these imported fuels to the power plant. Without proper coordination, the related power investments will fail to deliver. The experience gained from the past few years is instrumental. These lessons will be internalized and addressed appropriately in PP2041. Additionally, PP2041 will substantially expand the domestic oil refining capacity and will focus on installing petroleum pipeline throughout the country to ensure quick and easy supply of oil to the demand point along with adequate safety measures to protect the environment.

Ensuring investment balance between generation, transmission and distribution: To ensure that the benefits of power production are well distributed to all parts of Bangladesh so that the target of 100% electrification is achieved, power generation must be balanced with proper investments in transmission and distribution. PP2041 will place strong emphasis to this so that there is no waste in terms of idle generation capacity and district-level power constraint to development is eliminated. Considerable emphasis will be given to further strengthening the Rural Electrification Program.

Promote efficient use of installed capacity: For a range of reasons, actual installed capacity is higher than maximum power produced in any year. For efficiently managed utilities excess capacity is about 20%. In Bangladesh, this is about 33%. This gap between installed capacity and capacity required to produce maximum power in any year is explained by shortages in the availability of primary fuel, particularly gas, difficulties in coordinating maintenance schedule and other operating obstacles. PP2041 will seek to address these concerns by improving operating practices in terms of timely availability of primary fuel, efficient maintenance practices and better management. This will help lower the investment cost of power generation and the average electricity prices.

Promote private investment in energy: A key element of the PSMP is the encouragement of the role of the private sector in power generation. Considerable progress was made under PP2021. The PP2041 will build on this to further stimulate the role of private power generation. As Bangladesh power expansion program moves away from the rental power plants, the efficiency of private power will improve based on large-scale and fuel-efficient power plants. This will be a major focus of the private sector power development strategy. Presently, distribution is a state monopoly. As Bangladesh develops and becomes an upper-middle-income country it will be appropriate to explore options for private distribution of electricity to promote efficiency and competition. In this regard, the role of the Bangladesh Energy Regulatory Commission (BERC) will be strengthened through greater autonomy and quality staffing to enable proper regulation and pricing of power and energy services.

Another focus of the PP2041 strategy will be the encouragement of renewable energy supply by private producers, including supply to the grid as well as direct sales to households. The solar housing schemes and solar irrigation supported by IDCOL are important examples of non-grid supply of renewable energy. PP2041 also intends to broaden the role of the private sector in the development of the oil and gas markets through deregulation and pricing reforms. Private provision of these services will promote investment, increase competition and increase consumer choices.

Further expand power trade: The positive role that power imports from India has played in expanding electricity supply at a competitive price has greatly benefitted the consumers. The scope for further expanding power imports at a lower cost than domestic production is large. In particular, while Bangladesh has very limited hydro-power potential, the neighbouring countries of India (North-Eastern states), Nepal and Bhutan have tremendous hydro-power potential. Power import also has the advantage of reducing the carbon impact of electricity production. Under PP2041, Bangladesh will seek to considerably expand power import options at competitive prices from neighbouring countries. The broadening of imports from Bhutan and Nepal will also help lower the risk of power supply disruption from conflict and accidents. Similar to power trade, PP2041 will actively explore and promote trading options with neighbouring countries.

Ensure proper energy pricing policy: Sound energy pricing policy is essential to ensure efficient use of this expensive and critical resource, to finance public investment, provide high-quality service to consumers, to promote private investment, and to ensure environmental protection. The energy public enterprises must be made financially solvent. This takes on added urgency in view of the massive power expansion program and the large investment requirements under PP2041. In particular, a major objective of PP2041 is to enable the power sector to be financially sustainable and earn a reasonable rate of return on assets. This is the situation with all upper-middle-income and high-income country public utilities. To achieve this objective, power prices will be set in a way that it enables enterprises to recover the cost of production and earn a reasonable rate of return on assets. The strategy to produce power on the least cost option basis noted above in terms of technology, the scale of operation and choice of fuel will ensure that this pricing policy is efficient and protects consumer interests.

The importance of proper energy pricing policy for environmental protection cannot be over-emphasized. Globally, it is well recognized that subsidized fossil fuel has contributed to excessive

carbon emission and discouraged the adoption of clean technology and investments in renewable energy. PP2041 will ensure that all fossil fuels are properly priced to eliminate the subsidy. Following the good practice examples of upper-middle-income and high-income countries and to ensure the consistency of the power and energy development strategy with environmental protection, consideration will also be given to the adoption of a carbon tax to reduce carbon emission from the use of fossil fuel and to promote investment.

Strengthening power and energy institutions: PP2021 put considerable emphasis to the development of major power and energy institutions especially the Bangladesh Power Development Board, the electricity supply companies, the Bangladesh Rural Electrification Board, the Bangladesh Petroleum Corporation and Petrobangla and its affiliated companies. Considerable progress has been made, which has been most prominent in the power sector reflected in a sharp reduction in transmission and distribution losses, improved metering and billing, sharply improved bill collections, and better consumer services. PP2041 will continue to secure further gains in all these areas. Along with the strengthening of energy sector public entities, as deregulation in the power and energy sector happens and private sector role expands, energy regulatory agencies will also be strengthened. The primary regulatory agency presently is the Bangladesh Energy Regulatory Commission (BERC). The BERC is still evolving but its role and influence will grow substantially as a greater private sector role emerges in power distribution and oil and gas supply. The BERC will be made fully autonomous and staffed adequately to play its natural role in a competitive and deregulated market to safeguard the public interest and promote healthy competition.

Three other important institutions that will be further strengthened are the Sustainable and Renewable Energy Development Authority (SREDA) and BEPRC and BPMI. The SREDA was established in 2012 as a nodal agency to promote, facilitate and disseminate sustainable energy. It focuses on both the development of renewable energy and energy efficiency. The functions of SREDA as a coordinating institution is still evolving. Its role and effectiveness in expanding the reach of renewable energy and securing energy efficiency will be further strengthened through capacity building, policy changes and financing.

8.6 Developing a Financing Strategy for Power and Energy

The rapid expansion in power generation and associated investments in transmission, distribution and energy supply infrastructures will require a huge amount of resources. As seen in Table 8.3, the generation programmed over the 20 years between FY2021 and FY2041 calls for a massive 60 thousand MW of capacity build up, which is an annual average expansion of 3000 MW per year. This implies an annual investment in power generation alone of about $3.0 billion in 2018 prices. The figure may be revised as per PSMP 2016. As per PSMP-2016 base case, grid based generation capacity is 21,369 MW in 2021, 33,000 MW in 2031 and 56,734 MW in 2041. In case of reserve margin, scheduled maintenance, forced outage, spinning reserve, Loss of Load probability (LOLP) are considered. To meet future power demand, year-wise generation capacity has been determined through Demand-Supply Balance considering existing generation capacity, capacity addition of new power plants and retirement of power plants as per planning. This has been shown in Chapter-11 of PSMP-2016. Along with demand mitigation, it is necessary to keep sufficient reserve margin in

determining generation capacity. Investments in transmission, distribution and energy infrastructure could involve another USD 1.4 billion per year, implying an annual investment program of USD 6.0 billion per year in 2018 prices, which amounts to 2% of GDP per year. Such large amounts cannot be financed from the budget alone and require the development of a careful financing building on the lessons of experience during PP2021. The key elements of the PP2041 financing strategy for power and energy consist of the following:

Private financing: The strategy above already highlights the critical role of the private sector in financing power generation. Considerable success has been achieved under PP2021 and PP2041 will build on this. PP2041 expects to further increase the share of private financing in power generation. Ongoing support programmes like IDCOL and Investment Financing Facility for Private sector (IFFP) will be further strengthened. Attention will be given to ensuring that private financing is efficient and low-cost and risk-sharing burden is equitable. In particular, the role of high-cost rental power plants will be phased away and emphasis will be given to large and fuel-efficient plants that are a part of the least-cost expansion path. PP2041 will also gradually deregulate power distribution and the oil market to enable private investments in power distribution, oil imports, oil refineries and oil retail distribution.

Mobilizing financing from public energy enterprises: Power and energy are private goods and private enterprises are all making profit and financing their expansion plans through own earnings. Public energy utilities in upper-middle-income and high-income economies typically cover their cost and earn a rate of return on assets to provide for new investments. The power and energy sector strategy provides for a similar financial performance target for Bangladesh public energy utilities. In this regard, proper pricing policy will be essential. BERC is empowered to set prices such that this objective is realized. With growing income and reliable energy services based on efficient investments, consumers will be willing to pay for these services as in other upper-middle- and high-income countries.

Budgetary Financing: In the interim years, budgetary financing will remain dominant, especially for financing large power plants and for transmission and distribution networks and for the energy supply-related infrastructure. Over the years, as private investment expands further and the finances of public power and energy utilities improve, budget funding will become an increasingly smaller part of the total investment funding, as is the case in other high-income countries.

Annex 8

Annex 8A: Year-wise Subsidy/Loan received by BPDB

Fiscal Year	Billion BDT.
2006-2007	3.00
2007-2008	6.00
2008-2009	10.07
2009-2010	9.94
2010-2011	40.00
2011-2012	63.57
2012-2013	44.86
2013-2014	61.00
2014-2015	89.78
2015-2016	43.65
2016-2017	39.95
2017-2018	54.86
2018-2019	75.00
2019-2020	30.72
Total	**572.40**

Annex 8B: Power Demand and Capacity Requirement as per PSMP-2016 Base Case

Year	PSMP-2016 Base Case with EE&C (Optimised Case)	
	Power Demand (MW)	Capacity Requirement (MW)
2020	13,300	21,130
2021	14,500	21,369
2022	15,800	21,564
2023	17,100	22,315
2024	18,500	23,544
2025	19,900	24,459
2026	21,400	24,781
2027	22,900	26,131
2028	24,400	27,880
2029	25,900	29,178
2030	27,400	31,120
2031	29,300	33,000
2032	31,200	34,162
2033	33,200	35,688
2034	35,200	38,388
2035	37,300	40,858
2036	39,400	44,076
2037	41,500	46,652
2038	43,700	48,946
2039	46,000	51,484
2040	48,500	53,905
2041	51,000	56,734

Annex 8C: Year-wise Fuel Based Generation Capacity up to 2041 as per PSMP-2016 Base Case

	2020	2021	2025	2030	2035	2041
Fuel-wise composition (MW)						
Gas/LNG	9,928	9,562	8,515	8,731	14,746	19,477
Coal	5,873	5,873	6,977	9,377	11,777	20,195
Oil	3,900	3,705	4,005	4,250	2,373	700
Hydro	230	230	230	330	330	330
Nuclear	-	-	2,232	3,432	4,632	7,032
Cross Border	1,200	2,000	2,500	5,000	7,000	9,000
Total	**21,130**	**21,369**	**24,459**	**31,120**	**40,858**	**56,734**
Fuel-wise composition (%)						
Gas/LNG	47%	45%	35%	28%	36%	35%
Coal	28%	27%	29%	30%	29%	35%
Oil	18%	17%	16%	14%	6%	1%
Hydro	1%	1%	1%	1%	1%	1%
Nuclear	0%	0%	9%	11%	11%	12%
Cross Border	6%	9%	10%	16%	17%	16%
Total	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

CHAPTER 9

CREATING AN INNOVATION ECONOMY FOR BANGLADESH THROUGH FOSTERING ICT AND SCIENTIFIC RESEARCH

CREATING AN INNOVATION ECONOMY FOR BANGLADESH THROUGH FOSTERING ICT AND SCIENTIFIC RESEARCH

9.1 Introduction

The global map is being altered at a much faster rate than anticipated due to the disruption created by digital infrastructure, artificial intelligence, the Internet of Things, and blockchain and soon, quantum computing; and yet Bangabandhu Sheikh Mujibur Rahman's words uttered in 1974 in front of world leaders at the 29th UN General Assembly still ring amazingly true today after more than four decades: "… we will look to a world where humanity is capable of great success in the era of astounding advances in science and technology. … By the equitable distribution of all the resources and technical knowledge of the world, the door to such welfare will be opened where every person will have the minimum guarantee of a happy and respectable life." He hoped to see 'astounding advances in science and technology' creating 'equitable distribution'. This philosophy is powerfully reflected in the Digital Bangladesh 2021 clarion call of the Hon'ble Prime Minister Sheikh Hasina which has led to the remarkable progress of Digital Bangladesh focused on taking services to citizens' doorsteps being implemented with direct guidance of the Hon'ble ICT Advisor Sajeeb Wazed Joy.

Bangladesh has experienced sustained, accelerated GDP growth rate since 2010; indeed, the GDP growth in recent years has been the highest in the country's history. The country has moved up to low middle-income status but, more importantly by human development indicators, achieved a level of development commonly predicted for twice its per capita income. Bangladesh's labour-centric manufacturing competitiveness coupled with dynamic entrepreneurship has lifted Bangladesh to 2nd position with 6.4 percent global market share in the world apparel trade (World Trade Statistical Review 2019), followed by Vietnam and India.

However, inequality rose significantly during this period as well. One reason is the disconnect among economic growth, wage growth and job creation. What then, will be the future of Bangladesh's economy with its heavy dependence on low-skill industries like readymade garments and migrant workers for remittances? Will the education sector be able to adapt to provide the skills needed as the country progresses in its growth path? Over the next 20 years, Bangladesh - like many other countries - faces some very big challenges to future employment - as the combination of automation, artificial intelligence, fourth industrial revolution and other trends, such as the shift to a circular economy, threatens existing jobs in key industries.

As in many countries, these challenges may be hard to respond to. Bangladeshi citizens often lack the knowledge or motivation to reskill. Employers may see little benefit for them in training employees for new jobs with someone else. Within the public sector there may be complex and fragmented responsibilities; lack of a shared perspective on vulnerabilities and opportunities; misalignment of policy; and sometimes the misconception among policy makers, business owners and employees that these challenges are not imminent in our context.

For Bangladesh to become a prosperous, developed and poverty-free nation by 2041, Government must play a leading role in creating an adaptive national system for collective, whole-of-society planning, adaptation, action and learning through collaboration among policymakers, private sector, academia, skills development organizations and development partners.

Bangladesh has significant headroom in improving competitiveness by leveraging digital possibilities, harnessing advanced technologies broadly termed as the fourth industrial revolution, investing in science and technology research fostering innovation, and linking higher education with economic growth. Insignificant patent filling record, few scientific publications, and less than 1 percent of GDP investment in R&D indicate that Bangladesh has not leveraged those growth drivers yet. Despite the possibility of factory job loss due to robotics and automation, once artificial intelligence, sensors, software, data analytics, augmented and virtual reality, additive manufacturing, and science embedded in software are added to diverse activities starting from manufacturing to agriculture to healthcare, Bangladesh's economic growth has the potential to accelerate to new heights—likely reaching and sustaining 9-10 percent annually over next couple of decades. Transformation of both public and private services over digital space and business process reengineering with software and ubiquitous connectivity will lead to higher efficiency, lower transaction cost, and added productivity giving an additional bump to GDP. Moreover, the integration of artificial intelligence in production and consumption in energy leading to the exploitation of increasing renewable energy, hydrogen economy and clean vehicle will lead to profitable exploitation of green growth opportunity in turning climate, pollution and environmental issues in favour of Bangladesh's growth. The exploitation of digital and AI possibilities also offers a great opportunity in reducing road accidents saving a significant portion of more than 2 percent GDP lost per year.

To attain high-income status by 2041, per capita income should cross USD 12,500 in today's prices—more than 6 times the current level. To attain this ambitious goal, with the given unexploited possibilities of ICT innovations and scientific research, this perspective plan lays down thoughts and ideas in exploiting unfolding future possibilities to empower Bangladesh to create an innovation economy by fostering ICT and scientific research.

9.2 The State of Progress towards Innovation Economy

The innovation economy focuses on the creation of knowledge and its integration into products and processes to produce them so that the quality keeps going up and the cost keeps going down while causing less pollution and creating high paying jobs in the local economy. To harness this potential, Bangladesh needs to focus on economic incentives and institutions to create and use knowledge for productivity gains and to have a body of skilled professionals in science and technology that can lead the research and innovation and adapt knowledge to the local circumstances. Furthermore, it calls for an effective Information Communications Technology (ICT) strategy to transfer knowledge and facilitate transactions.

Education and R&D capacity for moving towards an innovation economy is being developed. To prepare university graduates to uplift Bangladesh to the innovation economy through knowledge creation, the Ministry of Education, with the assistance of the World Bank, has undertaken a Higher Education Quality Enhancement Project (HEQEP). The purpose of HEQEP is for improving the quality of teaching, learning and research capabilities of the tertiary education institutions.

a2i's iLab has been incubating more than 250 projects and accelerating over 60 prototypes from grassroots innovators with a view to scaling them up through public and private sectors. Many of these innovations received financing from the Service Innovation Fund (SIF).

a2i's interventions have also had a significant impact on the educational sector of Bangladesh through ICT enabled dynamic solutions which aims at ensuring inclusive and accessible quality education for everyone while promoting "leaving no one behind". With the vision of ensuring quality accessible education for every single citizen of Bangladesh, 'Teachers Portal' has brought together 403,507 teachers and allowed effortless access to 253,759 shared educational quality contents. Furthermore, 177,691 stimulating and informative classes have been taken by using Multimedia Classrooms along with 100+ accessible multimedia model content specifically developed for differently abled teachers for using Multimedia Classrooms. Additionally, more than 700,000 physically impaired have been enabled to receive accessible educational contents through Multimedia Talking Book, Accessible Book Reader and Accessible Dictionary.

In the area of technical education, the main focus of the government has been to expand technical universities at the district level, spread the outreach of the information communications technology (ICT) and support the adoption of agriculture technology. There is a separate ministry of Science and Technology that is dedicated to strengthening scientific progress and development of technology. The development of ICT division in the ministry of post and telecommunication has increased emphasis on ICT led progression of the economy.

PP2021 laid significant emphasis on building a knowledge economy as a key development priority for Bangladesh, sponsoring the importance of knowledge and technology diffusion for the promotion of knowledge networks and "national innovation systems." In 2011, the Government formulated and adopted the National Science and Technology Policy laying down the guidelines for science and technology activities and research, institutional and manpower development, dissemination and documentation facilities. Both the 6th and 7th Plans have also emphasized science and technological research to hasten technical progress and productivity growth. It has been recognized that such progress can be achieved through the adoption and adaptation of imported technologies as well as the development of indigenous technologies. Despite substantial progress, much more remains to be done to improve Bangladesh's ranking as shown in Annex 9A. To drive the contribution of total factor productivity from exiting 0.3% to 2.5% by 2031 and 4.5% by 2041, substantial progress needs to be made in uplifting the ranking of production process sophistication, capacity for innovation, company spending on R&D, and university-industry collaboration in R&D. Education and research should make a major contribution to uplifting Bangladesh's source of competitiveness from cheap labour to highly competitive manufacturing, process sophistication, and innovation capability. To achieve them, Bangladesh should target to accelerate Science and Technology outputs as laid down in Annex 9D. To integrate science technology, and innovation into productive activities in achieving development targets by 2031 and 2041, Bangladesh needs to pursue a well-planned evolution in innovation policy positioning Bangladesh among top-performing countries as detailed out in Annex 9B. In developing the national innovation system driving economic growth Bangladesh should draw lessons from other countries such as Korea, India, and Taiwan, summarized in Annex 9E.

Digitization and service transformation are moving ahead. The spread of ICT revolution has received particular emphasis based on the personal attention provided by the Honorable Prime Minister under her Digital Bangladesh Initiative. Digital Bangladesh is an integral part of the government's *Vision 2021*. The Digital Bangladesh initiative consisting of four key priorities are:

- Developing human resources ready for the 21st century.
- Connecting citizens in ways most meaningful to them.
- Taking services to citizens' doorsteps.
- Making the private sector and market more productive and competitive through the use of digital technology.

Bangladesh made important strides during the Sixth Plan (2011-2015) and the on-going Seventh Five Year Plan (2016-2020) in utilizing technology to bring a tangible transformation in all four areas. Progress made in bringing government services to the doorsteps of citizen is probably the area where Bangladesh registered most significant progress. Development interventions have resulted in a number of citizen-centric e-initiatives and services such as multimedia classroom and teacher-led education content development in public schools, mobile phone-based health service from Upazila Health Complex, mobile financial services, agricultural and other livelihood information and services (e-Tathyakosh) online through grassroots outlets.

In addressing the connectivity issue, the government has undertaken initiatives to build ICT infrastructure, including four-tier national data centre, and establishing connectivity up to rural area of the country by laying fibre optics cable. The Government has connected Moheshkhali, one of the remotest islands of Bangladesh, to mainstream digital activities and services under the digital island initiative, and aims to replicate on other remote islands. Recently, Bangladesh has installed her maiden communication satellite, becoming the 57th nation in the world and fourth in South Asia to own a satellite. Bangladesh has also succeeded in installing the 2nd submarine cable connectivity. On top of it, the advent of international terrestrial cable connectivity providers has significantly addressed the quality, cost, and redundancy issues of the internet. Already 18,500 government offices have been brought under the same network by establishing connectivity.

A number of acts, policies and guidelines are in place to guide the nation towards the realization of Digital Bangladesh. The ICT Policy 2009 and the 'Strategic Priorities for Digital Bangladesh 2011' also contain elaborate work plans. Because of the cross-cutting nature of the vision, these work plans encompass priorities in almost all development sectors. These policies and regulations have provided a first-round enabling environment for the implementation of the Digital Bangladesh enterprise. The ICT Policy 2009 has now been updated to ICT Policy 2015. To address Visions 2021 and 2041, ICT Division has formulated 'ICT Policy 2018' focusing on digital security, leveraging of emerging technologies like IoT, Big Data, Robotics, and AI, ICT in education, skill development, employment, innovation, business promotion, and SDG targets by 2030. Digital e-Commerce Policy 2018 has also been developed to support growing e-Commerce. The Government has also enacted 'Digital Security Act, 2018'. ICT division is also working on the integrated digital Government and strategic roadmap development for transforming public services on the digital space. Some of the major achievements are:

- Under the a2i program, the government has ensured people's easy access to public services by setting up a national web portal covering 46,500 government offices and 5,875 Digital Centres. Even people from remote villages are getting various services online through the 4,571 Union Digital Centres. 503 million marginalized citizens received different public and private services from the Digital Centres. Since 2017, 8500 post offices have been converted into post-e-centres where IT training is being provided.
- A citizen-centric digital payments infrastructure has been deployed countrywide facilitating leakage-free disbursement of social safety net (SSN) payments and laying the foundation for innovative inclusive digital financial services covering savings, credit and insurance. Under this initiative, agent banking services have been rendered through 3,958 Digital Centres to more than 1 million citizens, More than 1.5 million citizens have received different allowances from Digital G2P payment system under Social Safety Net Programme, digital platforms such as E-Challan and EkPay has been implemented to alleviate the process of P2G services.
- a2i introduced e-Mutation service to provide citizen responsive, hassle-free land service with the use of ICT in improving the operation of land administration. About 1.5 million citizens have been benefited from obtaining services through e-Mutation from 485 upazillas and more than 4,560 offices.
- a2i's Digital Service Design Lab is a unique innovative methodology for the rapid digitization of the government services involving service recipients and service participants under the guidance of technical experts. Till now, 1,856 services have been identified for digitization as part of the National Service Digitization Roadmap Workshop. To date, 695 services of 20 government agencies have been designed for digital transformation through this methodology.
- a2i has initiated an innovative 'Empathy Training' with the purpose of empowering civil servants to place themselves in citizens' shoes and motivate them with a sense of purpose for driving unprecedented improvements in public service delivery. Till now, 35,000 civil servants have been facilitated by empathy training and they have successfully completed the piloting of more than 1,800 innovative projects contributing to the acceleration of innovation culture within the society.
- The implementation of citizen-centric e-initiatives including e-service delivery, health services from upazila complex, agriculture and other livelihood information and services through grass-root outlets have brought several international recognitions.
- World Summit on the Information Society (WSIS) award-winning Bangladesh's National Digital Enterprise Architecture (BNDA) has been developed for the integration of essential e-Government services like e-pension, land record management, etc. 'Porichoy' has been developed to provide easy access to ID verification services as a foundation to a host of citizen-focused services.
- Bangladesh has significantly moved forward on the E-Government Development Index of the United Nations due to the development in the information-communication technology sector and harnessing technology to innovate citizen-centric public services over the last

few years. In 2018, Bangladesh advanced 35 steps since 2012 and secured the 115th place among 193 countries on the E-Government Development Index or EGDI scoring 0.4862 and 51st place in E-Participation or EPI with a score of 0.8034.

- The digital signature has been introduced, and Digital Security Agency has been established, and measures have been taken to uplift cyber security issues to facilitate as well as increase trust of the digitization of services. Initiatives like "Digital Transformation of Text Books", initiative of Department of ICT (DoICT) to address last-mile connectivity, Government e-mail Policy 2018, and Establishing Digital Connectivity of DoCIT will speed up the digitization progress further.
- Due to some massive technology-driven actions, the mobile penetration is above 84 percent among the whole population with a growth of 10 percent per annum. Notably, 12 countries in the world that have more than 100 million active subscribers includes Bangladesh which now has over 130 million active subscribers. Moreover, the number of Internet users in Bangladesh is nearly 70 million.
- With the expansion of smartphone and 3G penetration, international bandwidth consumption has accelerated in Bangladesh. Country's international bandwidth consumption increased 63.5 per cent in the financial year 2017-2018 compared to that of the previous year, primarily driven by internet usage in day-to-day life, expansion of e-Government services, and growing connectivity of businesses. International internet bandwidth consumption increased 261 gigabits per second to 672 Gbps at the end of June this year from 411 Gbps a year ago.

Based on these success records, Bangladesh needs to progress further to position herself among medium to high-ranking countries in digital service space and indexes. As shown in Annex Table I, there has been ample opportunity of progress in key areas starting from e-Participation to ICT business model creation to leverage ICT for growth, reaching a similar level of high performing countries so that ranking keeps improving.

To scale up the success of digital demonstration for wide-scale adoption, companies, as well as government, often run into an unexpected obstacle: culture clash. Research finds that by ignoring culture, organization risk transformation failure. The focus on service transformation should shift from making a change and then just sit back and wait for the next five years of business as usual to a state of constant revolution. The cultural shift to accommodate such constant change of flux is quite paramount.

Strengthening of the ICT ecosystem is stimulating vibrancy in the industry. Over the last nine years, Bangladesh showed its capability to materialize the Digital Bangladesh. With over 3,000 local enterprises operating in hardware, software and business process outsourcing (BPO) sectors, the size of Bangladesh ICT industry at present stands around USD 700 million. Progress is being made in developing Bangabandhu Hi-Tech Park on 355 acres of land at Kaliakoir. The park will be a specialized economic zone and the lifeline of the country's ICT sector. Software Technology Park at Janata Tower is located in the heart of the Dhaka city. Moreover, additional high-tech parks are being developed at Rajshahi and Sylhet, and 12 IT parks are being developed at 12 districts. Some

software companies are running businesses here and a few international companies have shown interest to set up software R&D centres in this park. Sheikh Hasina Software Technology Park at Jashore has commenced the operation. For addressing the human resource need of the industry, Government has been making progress in developing trained professionals for reaching the number of IT professionals up to 2 million by 2021. As part of the program, Government has established specialized 16 labs at universities and 10 IT Training and Incubation Centres at district levels, and launched projects and programs to achieve the target, and 20 specialized labs at universities are in progress. The government has also introduced compulsory ICT education at the secondary level.

Bangladesh has already emerged as one of the top destinations for freelance online work. oDesk Corp, a US based leading marketplace, ranked Dhaka third among global cities where online jobs are outsourced from the west. There are about 0.5 million freelancers involved in outsourcing jobs.

The Government has been supporting innovation by providing innovative startups from different stages from all over Bangladesh with funding, mentorship, network and investment readiness. To facilitate innovation and entrepreneurship, the Government has established Innovation Design and Entrepreneurship Academy (iDEA) under ICT Division. The iDEA has been promoting startups through offering of incubation space, financing, and mentoring services. Janata Tower Software Technology Park, country's first IT incubator was launched by the Government which has been supporting startups with free office space, dedicated mentorship and other accelerator facilities for up to 1 year. Alongside the Government, a number of startup incubators from private sector, with rich network of mentors and investors, have been working closely with the local innovative startups, especially tech ventures. With the emergence of hi-tech parks, these programs have been providing integrated solutions for innovative tech startups in Bangladesh.

To address intellectual property issues, Government has already made progress in creating awareness, establishing office (Department of Patents, Design and Trademarks) for copyright, patent and trademarks, and pursuing balanced approach in addressing IPR issues. Bangladesh Securities and Exchange Commission passed the Alternative Investment Rules, 2015 to facilitate long-term financing support to the businesses through venture capital and private equity funds. We have been seeing scintillating signs of the promise which Bangladesh holds when a barely-eight-year-old local ecommerce venture gets an equity investment from the private investment arm of the World Bank at USD 10 million valuations, or a three-year-old local bike-hailing service gets valued at over USD 40 million. The nation as a whole reached nine Figures in software services export several years ago and is on course to reach ten Figures within the next three years. Bangladesh has been experiencing the gradual transformation of a sleepy agrarian economy of the early 20th century into an emerging industrial hub of the 21st century that is steadily embracing digital technologies in all spheres of its socio-economic activities. The momentum of the progress should be maintained so that within the stipulated time frame, ICT industry of Bangladesh attains certain targets as laid down in Annex 9D. Some of the areas of making significant jump are high-tech net exports, ICT services exports, Knowledge-intensive employment, computer software spending and high & medium-high-tech manufactures.

9.3 Unfolding Digital Opportunities and Innovation

It's being observed that while advanced countries are witnessing the emergence of high-value firms leveraging digital technologies, developing countries are focusing on e-governance and smart cities, futuristic urban centres which use ICTs to improve public services such as transportation, health care, electricity and water provision, to leverage unfolding digital technology opportunities. For example, through union digital service centres, Bangladesh has been taking critical services to the doorsteps of rural Bangladesh seeding the possibility of reducing inequality between urban and rural populations by leveraging digital opportunities.

Leading global researchers on innovation and digital transformation suggest that emerging technologies are poised to fundamentally transform modern society in the 21st century. Technologies like artificial intelligence, robotics and 3D-metal printing are upending everything from agriculture to manufacturing to healthcare. They will have far-reaching impacts over our work, our lives, our society, our security and our politics all across the world. Technology progression is also opening the opportunity of improving the productivity while reducing the carbon footprint in a profitable manner. Research finds that economic sectors in developing countries starting from agriculture to energy production to manufacturing can be profitable in reducing emission by focusing on the integration of machine intelligence. Among different technologies, robotics, and automation are going to have a significant impact on jobs and future of work. As pointed out by McKinsey Global Institute (MGI), transformation led by these technologies are polarizing labour-market opportunities between high and low-skill jobs, unemployment and underemployment especially among young people, and even posing threat to stagnating incomes for a large proportion of households. According to some predictions, more than 800 million jobs will be lost by 2028, and almost 50 percent jobs run the risk of being wiped out by advanced technologies in developing countries like Bangladesh. On the other hand, new types of jobs could also be created. The challenge is how to leverage transformational technologies to create more gainful jobs than likely to be lost.

For many developed countries, advanced technologies are a blessing to capture higher productivity growth as their GDP growth momentum slows in many cases, partly reflecting the challenge due to ageing populations. According to recent research, automation threatens to block the ascent of Asia's less developed countries, creating a discontinuity in the economic model witnessed by Asia. It's being pointed out, "The window is closing on emerging nations. They will not have the opportunity that China had in the past." With the ageing population and growing income level of China, it was natural that labour intensive jobs would keep migrating to countries like Bangladesh, and Cambodia helping them to climb the ladder but automation threatens to block their ascent. Such unfolding reality should be taken into consideration to strategize, prepare and act to gain rather than suffer from the technology upsurge.

As a matter of fact, science, technology and innovation together with financing for development were identified by the UN as one of the two main "means of implementation" to achieve the SDGs by 2031. The challenge is to integrate them within local productive activities, as there is no natural correlation between the acquisition of science and technology competence, job creation, and economic growth.

Although robotics and automation are posing threat to labour-intensive jobs in developing countries, a broad array of technologies is also opening significant new opportunities. For example, research findings of MGI mentioned that the leveraging of 12 technology potentials could make 20 to 30 percent contribution to incremental GDP growth of developing countries from 2012-2025. It was also mentioned that AI-centric precision agriculture has the potential of increasing agriculture yield by 15 to 60 percent. Research of Boston Consulting Group (BCG) and Certified International Investment Analyst (CIIA) finds that to attain the vision of over 8 percent economic growth over next couple of decades developing countries should look for an alternative to China's past model of success. Rather they should focus on emerging opportunities out of Industry 4.0 and other technologies over the next 10 to 15 years to enjoy the growth with jobs.

The PP2041 faces the challenge of leveraging technology progression as opposed to getting marginalized. Experts suggest that the focus should be on "optimal strategy for technological adaptation, adoption, innovation and diffusion with special emphasis on the ICT sector" for creating high-paying jobs, addressing poverty, increasing productivity, and reducing inequality through the process of building an innovating learning economy. With the unfolding of the fourth industrial revolution, robots, artificial intelligence, computerized algorithms, mobile sensors, 3-D printing, and unmanned vehicles are here and will keep transforming human life across the world, affecting jobs in Bangladesh. Instead of decrying these developments and worrying about their "dehumanizing impact," we need to determine how emerging technologies are affecting employment and public policy so that we can prepare to leverage as opposed to getting marginalized.

9.4 Digital Transformation Scenario for Bangladesh

Digitization and service transformation should accelerate the growth momentum by leveraging already made progress in connectivity, institution building, piloting, and policy formulation. It's envisioned that Bangladesh keeps increasingly transferring major services, delivered by both public and private sectors, over digital platform resulting in declining transaction cost. Eventually, by 2041, services having the potential to benefit from information and communication technologies are to be transformed as e-services. In addition to the reduction of transaction cost, such service transformation should also exploit the opportunity of decreasing yield gap in farming, and quality and access gap in healthcare, education, financial and insurance, among others, to create greater opportunity at the bottom of the pyramid and lower-income gap. In order to attain developed country status by 2041, Government will need to make a substantial improvement in major indicators as shown in the Annex 9A. In all these indicators, Bangladesh should target to be ranked within 40 best-performing countries of the world. For example, e-participation ranking in Global Innovation index should improve from 82 in 2018 to 40 by 2031 and 20 by 2041. Similarly, per person Internet bandwidth consumption should jump from less than 10 kbps to over 50 kbps by 2041.

Table 9.1: Evolution of Bangladesh's Competence in Digital Space and Indexes

Focused areas and Indicators	Bangladesh's development stages over three major periods					
	Till 2019		2020-2031		2031-2041	
Global Innovation Index 2019						
	Score (0-100)	**Rank**	**Score (0-100)**	**Rank**	**Score (0-100)**	**Rank**
ICT accesses*	35.7	109	50	50	85	20
Government's online service	78.5	51	75	45	90	15
e-Participation	80.3	51	70	40	85	20
ICT and Business model creation	50.2	103	65	50	75	20
ICT & Organizational model creation	42.1	107	55	60	65	30
World Economic Forum: Global Competitiveness Report, Ranking among 141 countries in 2019						
	Score (0-100)	**Rank**	**Score (1-7)**	**Rank**	**Score (1-7)**	**Rank**
Internet access in schools	3.3	115	5	60	6	30
Fixed-broadband Internet subscriptions/ 100 pop+	12.7	88	25	50	40	20
Internet bandwidth kbps/user+	9.2	111	40	60	55	40
Mobile-cellular telephone subscriptions /100 pop+	81.1	106	100	70	120	40

* Wireline broadband access plays an important role +not score in scale of 1-7

The unprecedented opportunities, benefits and as well as challenges stem from new infrastructure, applications, and insights of data. The emerging data revolution is creating unprecedented opportunities for improving old services and creating new services thereby establishing a level playing field for all stakeholders and leaving no one behind. However, they are paired with new problems to solve and dilemmas to manage. Collaboration and innovation are required in redesigning institutions and norms to respond effectively to the fast pace of digital change. The challenge is to make smart decisions today to shape Bangladesh towards the desired form for future generations. Forum in the context of changing global scenario and the lessons learnt from the past, to achieve a prosperous, sustainable, inclusive, and trustworthy digital Bangladesh, Government needs to focus on: (1) Access and adoption, (2) Responsible digital transformation, (3) Fit for purpose, informed governance, (4) Secured and resilient people, processes and practices, (5) User-centric, interoperable digital identities, and (6) Trustworthy data innovation. Moreover, the government needs to gradually move away from direct service delivery and more towards creating enabling digital platforms and infrastructure that enables the private sector, civil society and academia to partner and meet citizens' needs for modern, personalized services. To harness this potential, Bangladesh should get into forward-leaning in taking the roles of attackers, seeking to harness new technologies, and rethinking business models of public and private sectors to catch and ride over digital disruptive waves. The focus should be on digital disruption transforming the society, changing the demand and supply of the industry. Digital disruptions must focus on addressing unmet demand, connecting to consumers spreading from rural communities to across the world, linking talents to global learning platforms and job market, enriching products and services with information, nurturing agility in the culture for driving transformation, software and intelligence, and changing the quality and the cost structure.

Moving from factor-driven stage to innovation-based economy should be the paradigm shift in growth drivers for achieving 2041 vision of Bangladesh. Changing production priorities

from replication and imitation of simple products to innovation, for driving process and product sophistication and increasing TFP contribution to economic growth, should be given due priority. The focus should be on making an early-stage public investment for triggering the creation of a strong ICT R&D market so that by 2041, technology companies investment 30 percent of their revenue in R&D. All economic sectors starting from agriculture to transportation keep increasing investment in R&D and sourcing of local science-intensive software innovation in their products and processes to produce them. Universities are to be integrated with the ecosystem in creating intellectual assets and transferring them into product and process features so that by 2041, almost 25% of the gain from innovation emerges from university centric R&D activities. By taking the advantage of ICT innovations, Bangladesh should target to lower the rate of road accidents by 70 percent by 2041, so that GDP loss caused by road accidents is far less than current almost 2 percent. Moreover, emerging technology innovations should be exploited to improve the efficiency and effectiveness of indigenous products and processes to produce them. Small and medium-sized industries (SMEs) should be integrated with the national innovation system, so that SMEs can start improving their product design and processes to produce them with the target that by 2041 contribution of local innovation around ICT and scientific research would be driving 20 to 30 percent of their additional revenue growth per year. The emergence of the fourth industrial revolution should be transformed in favour of Bangladesh. To make ICT, Science and Innovation growth driver, it's envisioned that Bangladesh's R&D investment keeps increasing reaching 2 percent of GDP by 2041, as outlined in Annex 9C in the annexure. Although initially, the Government's contribution will be high, the private sector should share 80% of R&D investment by 2041. Through the process, Bangladesh should target to uplift position in major innovation indices as spelled out in Annex 9B and Annex 9C. Science and technology momentum keeps evolving from existing basic institution development to opening new economic areas through technological invention and innovation. The higher academic institutions should be upgraded from their current role of just producing graduates to driving scientific discoveries, technology invention and industrial innovation. By 2041, almost 20% of the nation's R&D investment should be destined to universities. Along the way, R&D focus should be migrating from technology absorption and adaptation to technology invention and scientific discoveries. Through this innovation-driven capability advancement journey, ranking in capacity to innovate should jump from 97 among 137 countries to 30 by 2041. As pointed out in Annex 9E, Science and technology outputs in all major categories starting from patent filing to publication should give a big jump by 2041.

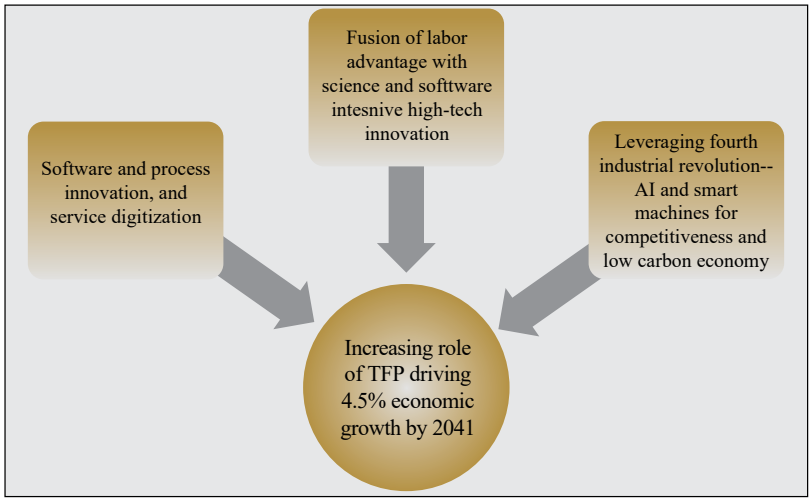
Driving the growth of ICT and innovation industry should be the focus. In addition to the capital Dhaka, by 2041, Bangladesh should envision having multiple economic growth poles around the country out of technology innovation. For example, Cox's Bazar and the coastline could grow as ICT innovation-centric marine, aquaculture and wind energy technology innovation hubs. Technology is blamed for creating inequality. But, this technology created new economic growth pole in the farmland of California giving birth to Silicon Valley in a garage. Similarly, technology turned sleeping town Bangalore into an economic powerhouse of India. Technology could be used as a new tool by Bangladesh for creating new economic growth poles outside the capital. In order to achieve 2041 vision, Bangladesh should target in improving high tech net export as a percentage of total trade from 0.2 to 20, ICT service export as a percentage of total trade from 1.2 to 8, and knowledge-intensive employment from existing 8 percent to 35 percent by 2041 as spelled out in Annex 9D.

Leveraging the Fourth industrial revolution for strengthening competitiveness and creating high-income future work opportunities will lead to the prosperity of Bangladesh. With the unfolding technology portfolio of the Fourth Industrial Revolution, how Bangladesh can maximize the benefits of ICT, science and technology for Bangladesh has become far more important than ever before. Constantly jobs are being eaten up by advanced automation, and according to demonstrated technology potentials, most of the manual jobs in the RMG sector are vulnerable to automation. It's time for the government, leading companies, civil society, youths, entrepreneurs, politicians, start-ups and experts from all across the society to co-design and pilot innovative new approaches to policy and governance to counter negative implications and leverage Fourth Industrial Revolution. For example, the benefits of drone technology have the potential to touch the lives of 160 million Bangladeshi citizens. Agriculture and public health are just two of the areas where drones could make a lasting impression. Drones might be a big help in bringing precision farming in Bangladesh in doubling farmers' income. It's time for Bangladesh to have well thought out strategy document focusing on significant areas where the fourth industrial revolution can advance the human condition, such as healthcare and the environment. Bangladesh's manufacturing sector benefits from traditional strengths like labour cost competitiveness, a young and large workforce, and natural resources that support key industry sectors such as footwear, textile, RMG, and jute. Although the focus has been on infrastructure, advanced technologies, such as the internet of things, artificial intelligence, block-chain, robotics and additive manufacturing could be fused with existing strengths driving the manufacturing competitiveness. Bangladesh should take the advantage of augmented and virtual reality so that workers could be trained in a far faster way than before, and even low skilled workers could be empowered to perform complex tasks in a very precise manner. The focus should be on integrating big data, data analytics, AI, and automation in creating more jobs than likely to be lost on the factory floor.

9.5 Strategy of Exploiting Digital and Innovation Opportunities

Bangladesh faces a daunting challenge in strategizing the formation of an innovation-economy so that Bangladesh's economic growth from TFP contribution keeps improving from exiting 0.3 percent reaching 4.5 percent. Such a large contribution of TFP to GDP growth is vital for Bangladesh for reaching envisioned advanced income status by 2041. With the given context, by taking lessons from Korea, India, Taiwan and other countries (summarized in Annex 9E) Government needs to adopt a three-pronged strategy: i. Software and process innovation, and service digitization, ii. Fusion of labour advantage with science and high-tech innovation, and iii. Leveraging fourth industrial revolution AI and smart machines for competitiveness and low carbon economy, as shown in the Figure. 9.1.

Figure 9.1: Three-Prong Strategy for Bangladesh's Innovation Economy



Software and Process Innovation, and Service Digitization: Leveraging ICT for growth has significant untapped potential. Both service digitization and process innovation through reengineering will improve efficiency and reduce the transaction cost, resulting in higher economic growth. At the core of this strategy is the software innovation. Advancement in this area will lead to greater productivity of the local economy and the expansion of export.

For the underserved, electronic delivery of public services and digital payments are equalizers. These bring services (and ways to pay for them) to the doorsteps – and even to the fingertips – of individuals by reducing distance, cost, rent-seeking through movement towards a 'cashless society'. Thus, it will also be important for government to also acquire the capability to enable radically better services for the public. And do so in a way that makes it simpler and faster for both civil servants and politicians, the private sector and non-profits, to meet people's needs.

However, almost inevitably, national digitization efforts have multiple, uninteroperable ID systems, digital service systems and digital payments systems. Thus, it is not sufficient to merely unify these but ensure interoperability across all the camps through integrated service and payments delivery platforms. Not only does this make it simpler to design public facing services that are orientated around the needs of citizens rather than the organizational structure of government, it also becomes simpler to design entirely new types of services.

The national digitization effort will need to accelerate its maturity to ensure:

i. Services across multiple departments are able to 'talk' to one another (service interoperability)

ii. Payments across different types of banking and non-banking financial institutions are completely seamless (payments interoperability)

iii. Physical and virtual access points are within easy reach of every underserved citizen (unified access)

iv. All service providers and financial institutions unambiguously identify every citizen (unique IDs)

Data plays a critical role in measuring development progress, planning development interventions and addressing exclusion. It is therefore paramount to leverage the emerging data revolution to ensure evidence-driven policymaking to leapfrog progress, enable improvement of existing services and creation of new services.

At the same time, the potentially powerful negative side effects of technology have to be proactively, continuously and adequately dealt with to ensure the economic growth is sustained and social cohesion is strengthened. Alarming phenomenon such as the proliferation of fake news and control of personal data by mega corporations have to be addressed with citizen-centric regulation and mass digital literacy.

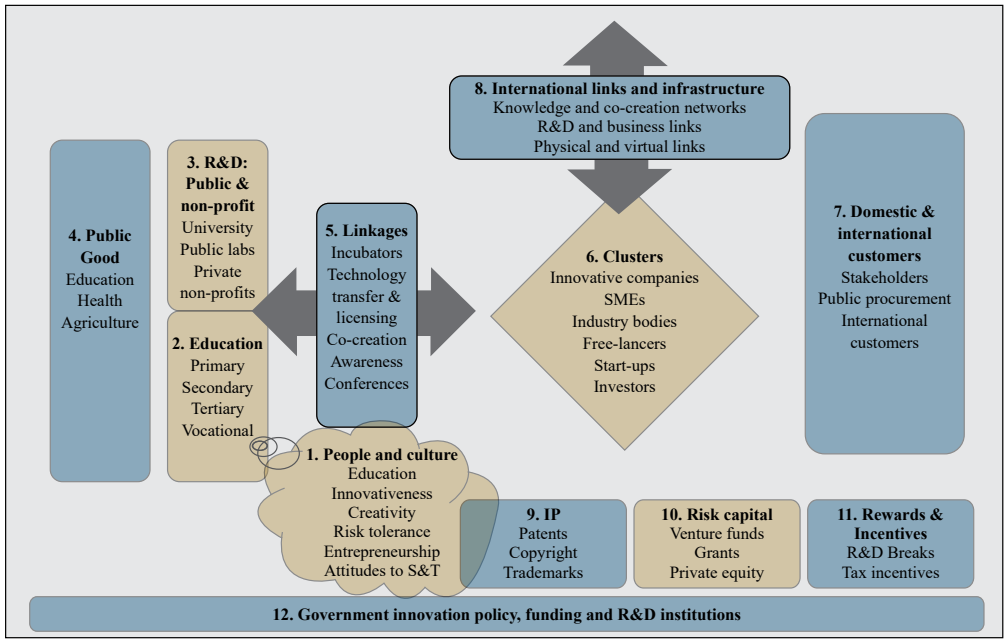
All government agencies may accelerate simplification of service delivery and adoption of innovation and digitization through a structured, multi-stakeholder engagement process that can expedite procurement, capacity development, implementation, maintenance and upgrades.

Fusion of Labor Advantage with Science and Technology Innovation: Although eroding, but still Bangladesh has substantial labour advantage. On the other hand, higher education institutions are producing a larger number of graduates. This strategic component focuses on the fusion of labour advantage with the mental capacity of Science and Engineering graduates to attain growing as well as a sustainable competitive advantage. For example, Bangladesh labour based success in textile and RMG could be taken to a new height by adding local innovation to the production process for reducing wastage and increasing quality. Similarly, the blending of science through software innovation in farming can improve the yield and reduce the wastage. Success in improving competitiveness by engaging local graduates into innovation will lead to greater export edge, as a result, existing export sectors will lead to higher growth creating more jobs than likely to be lost due to greater role of technology. Moreover, import substitution sectors like assembling of smartphones, or electronic products will start improving competitiveness resulting in the opening of new export windows.

Creating Capacity for Implementing the Strategy: The core underpinning in succeeding with the implementation of the envisioned strategy is the development of a functioning, comprehensive innovation and R&D ecosystem. The development of a scalable model of turning R&D investment into profitable innovation will enable market forces to transform Bangladesh into a developed country. To do so the Government will establish:

1. ***National Innovation Agency:*** The National Innovation Agency will work to build an ecosystem (see Figure 9.2 below) and conducive policy environment with the support of industry, research labs, universities and entrepreneurs. It will also recommend and pursue necessary policy and regulatory reforms in strengthening both the supply and demand sides for the successful exploitation of detected innovation opportunities. The innovation agency will drive Bangladesh from factor-driven stage to innovation-driven stage, changing the focus from export-oriented light industries like RMG and replication-based import substitution to promoting high-technology innovation for making transition and consolidation to a knowledge economy. As a result, Bangladesh's ranking in relevant indicators will keep progressing, explained in Annex 9B.

Figure 9.2: Bangladesh National Innovation Eco-system



Source: Adapted from Goran Roos, Lisa Fernstrom, Oliver Gupta (2005): National Innovation Systems: Finland, Sweden and Australia Compared, Australian Business Council

A quick appreciation of the eco-system could be developed by tracing the process flow from left to right, and then identifying the respective roles of the supporting actors at the bottom and top of the diagram. The actors on the extreme left build up a perspective of potential need and demand for creative and innovative products and services which are fulfilled by actors in the middle and finally delivered on the extreme right. Demand comes from members of the community, where the people and the culture (Item 1) are the final arbiter to determine the desirability of increasing improvements in their quality of life through innovation. Education (Item 2) plays a major role in changing social mindsets and expectations, while the R&D community (Item 3) develops a dynamic picture of what is possible. Institutions addressing the public good (Item 4) also anticipate demand, through their proactive planning processes, for new products and services.

Expressions of need and demand are transferred to innovators in the middle through an intervening process of linkages (Item 5). These linkages include a wide host of actors who create awareness, stimulate productization of ideas, transfer knowledge and technology, and promote development of prototype solutions. This is usually seen as the product incubation process. Actual innovation development takes place in clusters (Item 6), where entrepreneurial entities drive the development of innovative products and services in close collaboration and interaction with other supporting actors. Among them are the actors in items 1 to 5, as well as other companies, industry bodies and investors. The notion of industry clusters has been well-explained by Michael Porter, and it is worth highlighting that rivalry and competition is as important to innovation as co-creation and collaboration, to the extent that many companies in the ICT space promote the notion of co-opetition. Entities in innovative clusters need to develop actual products and services which are no longer prototypes, as they have to be tested in the market with actual users and customers. A business

case also has to be produced to justify commercializing the product. Domestic and international customers (Item 7) are finally served when all the criteria for innovative product development are met, and actual value realization then takes place.

International links and infrastructure (Item 8) provide access to knowledge, technology, markets and global partners. The network economy demands that products and services meet global standards, while opening the door to global penetration of innovative products through relatively minor modification or customization. Co-creation may also become a global activity.

Actors at the bottom (Items 9 to 12) provide supporting policy, strategy, enabling and facilitation roles to create a conducive environment for innovation. Government policy, funding and procurement institutions (Item 12) provide strategic direction, develop the knowledge and networking infrastructure for innovation development and create initial demand for innovative products. IP management and protection (Item 9), risk capital (Item 10) and rewards and incentives (Item 11) are equally important to enable innovation realization.

2 ***Sheikh Hasina Institute for Frontier Technologies (SHIFT):*** The SHIFT is a learning environment to create the skills of the future generation. It will be a specialized learning center focusing on students from the primary school to secondary school level to help them develop the advanced skills required for 21st century ICT Industry. The Institute will also have a future looking R&D Center where students and researchers from Universities and Industry can collaborate in cutting edge research. It will provide world class research facilities to facilitate the creation of IP in various frontier technologies.

3 ***Industry Focused R&D labs:*** These labs will basically be in charge of the implementation of innovation opportunities. In doing so they will also detect components requiring academic approach of research and development. Demonstration of profitable exploitation of R&D and innovation will eventually lead to the formation of such labs within private sector firms as corporate R&D labs.

4 ***Upgrade University Education and Research to Support Innovation:*** Along with the production of graduates, universities will be given specific responsibilities in undertaking innovation assignments given by councilsthe National Innovation Agency. They will engage faculty members and students in implementing those assignments. As a result, the quality of graduate will improve and also a new avenue of innovation and entrepreneurship will be created. In the course of time, universities will gradually move towards basic research and turning scientific advancement into technology to open a new frontier of growth, forming economic clusters. Some of the strategic action items are as summarized in Table II are: i. realigning academic research establishments increasing linkages with economic growth, ii. setting up new R&D centres and promoting R&D for meeting the industry need, iii. linking higher education to industry through research and innovation supporting the competitiveness of the industry, iv. creating the market of academic R&D and innovation focusing on applied research, technology fusion, and system-level innovation, v. transforming science into technology invention and innovation by facilitating technology transfer and commercialization, and vi. supporting path-breaking scientific research for disruptive innovation.

Just as in China, our universities must participate in many of the most ambitious basic research endeavors, and often play a crucial role in their implementation. The government will set up more specialized science and technology universities in different regions and invite experts within the country and outside to develop curricula that train students in R&D work for upcoming sub-sectors of ICT industries in particular.

In order to encourage the different actors in the R&D scene in and out of the academia, one approach will be to earmark an increasing volume of funds to leading universities, mainly through the Ministry of Education (MOE). Leading universities should be expected to lead in national R&D programs and projects, facilitate technology diffusion and pullovers, promote spin-off companies, incubation centres, and open laboratories for R&D sharing, to bridge-in foreign technology and partners. But this must occur in partnership with the most advanced companies in technologically sophisticated fields, particularly in advanced ICT sub-sectors. This should be part of all 5-year plans with as much concrete details regarding objectives, targets and the means to achieve them within a fixed time horizon.

An action program can be launched to promote specifically university-industry links for R&D. A policy action group with scientists, engineers, economists and entrepreneurs can be set up for this purpose. The goal of this group should be to set up state technology transfer centres in four to six leading universities at the beginning, with adequate funding and the most competent leadership that can be recruited nationally and internationally. It is vital strategically, to promote the commercialization of viable technological achievements. Tax write-offs and incentivized subsidies policies for university-based start-up companies are options to consider. As in China, these start-ups should be seen as crucial channels through which universities can contribute to national and local economies.

Financing the R&D and Innovation: To have balanced growth of the R&D ecosystem comprising of three major building blocks, R&D resource distribution keep evolving. In the beginning, the Government's specialized R&D centres will spend almost 80 percent of national R&D budget, followed by corporate labs by 15 percent and universities 5 percent. By 2041, the scenario will substantially change with the emergence of corporate R&D labs spending 70 percent, followed by universities 20 percent and the remaining 10 percent will be spent by Government laboratories. Similarly, at the beginning Government spending will cover almost 90 percent of the total R&D budget, which will keep declining reaching less than 20 percent by 2041. Further clarifications are provided in Annex 9C.

Moving Forward with Technology to be a Developed Country: Rapid progress in digitization, connectivity, the fourth industrial revolution, and artificial intelligence is catalyzing improved market analysis, knowledge sharing, product and service design, renewable energy sources, distribution models and operational efficiencies. Technology is also lowering market entry costs for non-traditional actors and start-ups with innovative 'disruptive' business models. To capitalize the technology force for driving economic growth in a sustainable manner, the Government, businesses, international financial institutions, civil society, industry, Think Tanks, and academia are required to collaborate in developing new ways of working with each other in pursuit of compatible objectives, so that the contribution of total factor productivity to GDP growth of Bangladesh keeps improving, reaching to 4.5 percent of GDP by 2041.

The economic impact of technology will likely emerge gradually. Research suggests that the adoption of technology and innovation as the driving force by firms as well as the Government as suggested in this perspective plan will follow a typical pattern a slow start given the investment associated with learning and deploying the technology, and then acceleration driven by competition and improvements in complementary capabilities. As a result, technologies' contribution as spelled out in this plan to the growth maybe three or more times higher by 2031 than it is over the next five years. The initial investment, ongoing refinement of techniques and applications, and significant transition costs might limit adoption at the earlier stage.

Migration from a factor-driven to an innovation-driven economy will likely result in a **widening gap at the level of individual workers, and also firms.** Demand for jobs could shift away from repetitive tasks toward those that are socially and cognitively driven and others that involve activities that are hard to automate and require more digital skills. To address challenges for individuals transitioning to new jobs, however, if they are given the support they need to develop and refresh their skills and return to the labour market, then resources can be redeployed to more productive parts of the economy.

There has been **unfolding race between countries to benefit from technologies,** running the risk of widening gaps between countries, reinforcing the current digital divide. Bangladesh should keep carefully observing varying strategies and responses taken by different countries and intelligently choosing smart tactical options. Research suggests that leading countries could capture an additional 20 to 25 percent in net economic benefits by 2031 from digital opportunities compared with today, while the following countries may capture only about 5 to 15 percent.

Unlike one time change of infrastructure, technology-led transformation would be in a constant flux of conversion, demanding **embracing a culture of lifelong learning, agile ways of working, and collaboration in digital space.** The challenge will be to add up economic benefits from technology in a consistent and incremental manner over the decades to manage the transition from Good to Great economic status. *Long-term policy support to leverage the dynamics of technologies by constantly adjusting responses in a consistent manner for gaining incremental progress in TFP, every year over next two decades, would be the key for Bangladesh to make the transition to envisioned developed country status by 2041.*

Annex 9

Annex 9A: Changing production priorities from replication and imitation of simple products to innovation, driving TFP contribution to economic growth

Focused areas	Bangladesh's development stages over three major periods		
	Till 2019	2020-2031	2031-2041
Development stage	Factor-driven stage	Investment and Innovation driven stage	Innovation-driven stage
Sources of competition	Cheap labour	Manufacturing capability Process innovation	Innovation capability in both products and processes
Major focus of industrial policy	Export oriented light industries like RMG Replication based import substitution	Technology intensive industries Manufacturing complex products	Promote high-technology innovation Transition and consolidation to knowledge economy
Science and technology role of the Government	Expansion of higher education Initiation of development of high-tech and software parks Setting up agriculture and industrial research establishments Articulation and implementation of digital Bangladesh Development of information infrastructure Expansion of tele & internet density	Realigning research establishments increasing linkages with economic growth. Setting up new R&D centres and promoting private R&D Linking higher education to industry through research and innovation. Creating the market of R&D and innovation focusing in applied research, technology fusion, and system level innovation	Focus on component innovation. Transforming science into technology invention. Pursuing path breaking scientific research, disruptive innovation

Position in Competitiveness Index prepared by World Economic Forum						
Indicators	Score (1-7)	Rank/137	Score (1-7)	Rank/137	Score (1-7)	Rank/137
Production process sophistication	3.7	79	4.5	50	6	30
Capacity for innovation	3.8	97	4.5	60	5	35
Company spending on R&D	2.8	113	3.8	65	4.5	30
University-industry collaboration in R&D	2.5	130	3.9	70	4.5	35
Contribution by TFP to GDP growth	0.3 percent		2.5 percent		4.5 percent	

Annex 9B: Evolution of Bangladesh's Innovation Policy and Position in Innovation Indexes

Focused areas	Stages of evolution		
	Till 2019	2020-2031	2031-2041
Science and technology investment and role of stakeholders	Five years economic plan includes science and technology strategy Focus on acquiring scientific and technology knowledge 0.6% of GDP for R&D finance Almost 100% R&D finance from the Government	Focus on integration of science and technology in process innovation Technology transfer and adaptation R&D financing increases to 1 percent of GDP 50% of R&D expenditure is undertaken by the private sector.	Technology fusion and development Product innovation Opening new economic areas through technology invention and innovation R&D finance increases to 2% of GDP Private sector makes 80% of R&D investment
Human resources	Increasing college and university graduates Providing vocational training	Highly skilled human resources in strategic areas Lifelong learning and large R&D resource pool	Human resources driving scientific discoveries, technology invention and industrial innovation.
Education	Establishing universities Focusing on quality teaching Providing funding for research through HEQEP project	Expansion and formation of industry focused research degree programs. Integration of academic research outputs in products and processes.	Academic research technology invention and product innovation opening new economic windows. 20% of R&D fund goes to universities
Public procurement	Focuses on purchasing finished technology products, mostly from foreign sources	Joint venture, technology transfer, and local value addition to qualify for public procurement of technology products	Adaptation and improvement of technologies acquired through public procurement for commercial innovation.
Distribution of R&D budget and contribution	GoB's R&D centres: 80% Private R&D labs: 15% Universities: 5%	GoB's R&D centres: 40% Private R&D labs: 50% Universities: 10%	GoB's R&D centres: 10% Private R&D labs: 70% Universities: 20%
R&D by nature in academic institutions	Basic research: 70% Applied research: 20% Development: 10%	Basic research: 20% Applied research: 80% Development: 20%	Basic research: 40% Applied research: 50% Development: 10%
Uplifting of Bangladesh in innovation and competitiveness indexes	Global Innovation Index 116 World Economic Forum 105 Bloomberg innovation index Bottom in Asia	Global Innovation Index 70 World Economic Forum 60 Bloomberg innovation index In the middle	Global Innovation Index 40 World Economic Forum 35 Bloomberg innovation index Among top 35

Annex 9C: Bangladesh's Uplifting in ICT Goods and Services Production, Consumption and Export[13]

Focused areas and Indicators	Bangladesh's evolution stages over three major periods					
	Till 2019		2020-2031		2031-2041	
	Global Innovation Index, 2019					
	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-100)	Rank
High-tech net exports, % total trade	0.2	93	10	50	20	10
ICT services exports, % total trade	1.1	78	5	40	10	8
Knowledge-intensive employment, %	8.3	102	15	60	30	35
Computer software spending, % GDP	0.2	75	0.4	55	0.5	40
High- & medium-high-tech manufactures, %	0.1	81	0.4	55	0.5	35

Annex 9D: Uplifting of Bangladesh's Science and Technology Outputs

Focused areas and Indicators	Bangladesh's evolution stages over three major periods					
	Till 2019		2020-2031		2031-2041	
	Global Innovation Index, 2019					
	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-100)	Rank
Patents by origin/bn PPP$ GDP	0.1	111	40	50	60	20
PCT (International filling through WIPO) patents by origin/bn PPP$ GDP	n/a	n/a	3	45	5	25
Industrial designs by origin/bn PPP$ GDP	2.3	49	15	35	25	20
Scientific & technical articles/bn PPP$ GDP	2.2	110	10	50	15	35
Researchers, FTE/mn pop	n/a	n/a	4000	50	5,000	20
Citable documents H index	10.4	63	20	40	35	25
Intellectual property receipts, % total trade	0	103	0.4	50	0.7	40
Graduates in science & engineering, %	11.3	98	20	25	30	12
Tertiary enrolment, % gross	17.6	97	50	50	80	15

Annex 9E: Summary of Lessons from the Experiences of Different Countries

Sl	Countries	Degree of Relevance	Observations
1	The USA and Western World	Moderate	Linear model of innovation for pursuing start-ups centric disruptive innovation is not suitable for Bangladesh at this moment. But, the process and incremental product innovation is a good lesson.
2	India	Moderate	Focus on process innovation, and also success of IT and software service for export are good lessons for Bangladesh. But, the strategy of supporting import substitution with little or no incremental innovation is not recommended. Moreover, frugal innovation does not appear to be scalable growth model either.
3	China	Moderate	Massive repackaging of foreign technologies to pursue replication leading to imitation and re-innovation is not recommended for Bangladesh. But progress in capital machinery innovation and technology absorption is recommended for Bangladesh.
4	Japan	Moderate	Model of disruptive innovation and also labour centric replication (in 1940s and 1950s) leading to re-innovation are not appropriate for replication at this point in time. Focus on incremental innovation and fusion of available technologies are good role models to follow.

13 Based on available research done jointly by the Government's a2i and ILO on the labor displacement issue, the following tentative predictions could be made: by 2041: (i) RMG will lose 60% jobs, (ii) Furniture will suffer 55% jobs, (iii) Leather sector likely to loss 35% jobs, and (iv) 20% jobs in tourism sector will be lost, (v) Agro processing will suffer 0.6 million jobs.. These are tentative predictions and more rigorous research is needed to firm up the numbers. Research is also needed to predict the extent of job creation that will also occur.

Sl	Countries	Degree of Relevance	Observations
5	Russia	Low	Scientific discovery and technology invention centric state controlled approach is not recommended.
6	Korea	High	Process innovation leading to incremental improvement of products appears to be role model for Bangladesh. Korea's strategy of demonstrating the benefit of R&D in driving industrial competitiveness through Government funded research institution played a key role in encouraging private sector to set up corporate R&D labs. To leverage this progress, Korea carefully developed university centric research capacity and linked them with private sector R&D labs and Government's research institution. Such strategy appears to be very suitable for Bangladesh in developing the national innovation system. As a result, although Koreas R&D spending has reached over 4.3% of GDP by 2015, but Industry shares almost 90% of this R&D investment. Moreover, linking of university is addressing human resource issue.
7	Taiwan	Moderate	Focus on SMEs for incremental innovation is a good lesson. Making investment in strategic emerging technologies and turning it to a large success is difficult to replicate.
8	Malaysia	Low	Infrastructure driven approach (like high-tech parks) to replicate Silicon Valley is a highly in-effective model.
9	Singapore	Low	Government incentive to encourage imitation based start-up approach, mostly around digital service space, is a weak model.
10	Saudi Arabia	Low	Massive expenditure on infrastructure and adoption of high-tech amenities to attract high-tech firms run the risk of major failure.

CHAPTER 10

BUILDING TRANSPORT AND COMMUNICATION INFRASTRUCTURE FOR SUSTAINED RAPID GROWTH

BUILDING TRANSPORT AND COMMUNICATION INFRASTRUCTURE FOR SUSTAINED RAPID GROWTH

10.1 Overview

In today's globalized economy, low-cost and efficient transport service is a major determinant of the competitiveness of the economy that influences trade and investment flows both internally within a country and externally. Efficient transport system also impacts on the pattern of regional development within a country and the location of poverty. Development of an efficient and low-cost transport network is, therefore, a key determinant of the ability to achieve the growth and poverty targets of PP2041.

10.2 Progress under PP2021

GDP growth targets of the PP2021 and goals of improved living standards called for a vibrant and effective transport network. Securing improvement in the transport system was, therefore, a major strategic objective of PP2021. The transport sector vision for PP2021 was to develop an efficient, sustainable, safe and regionally balanced transportation system in which various modes complement each other, interface appropriately and, where possible, provide healthy competition to each other. Special emphasis was placed on the introduction of modern technology for increasing capacity and improving quality and productivity of the system, development of the two seaports with smooth transport links to Dhaka, establishment of effective railway linkages between the east and west zones of the country, integration of road, rail and inland water transport, and participation in global and regional transport connectivity initiatives that help develop the land route links between South Asia and East Asia through Bangladesh. The targeted completion of MRT Line-6 (the first elevated Metro Rail of Bangladesh) has been set for December 2021. Substantial progress of construction works of three more MRT Lines (Line-1; Line-5 North; and Line-5 South) are expected within PP2021. Efforts were also to be made to improve resource mobilization through the introduction of user charges and fees and promote greater private sector participation in transport services infrastructure building.

The objectives and strategies of PP2021 for the transport sector were sound. The emphasis on intermodal transport coordination, development of the national highways, inter-city connectivity, regional connectivity, lowering the cost of trade logistics and improving transport network asset maintenance are all well placed. The idea of instituting road user charges and sensitivity to environmental sustainability is also appropriate. Similarly, the strategy to improve incentives for private sector participation in both transport sector service and infrastructure development is well placed.

Consistent with the PP2021 strategy, the transport sector along with energy has received high priority in budget allocation. The Sixth and Seventh Plans have allocated resources for all major projects in line with PP2021 strategy and priority. Significant new transport infrastructure has been added over the periods FY2010-FY2018 for roads and bridges. Services have expanded for all modes of transport. Private participation in air transport has grown significantly and most large cities are now connected with air services. These are major achievements that lay a strong foundation for consolidation under PP2041.

A major challenge has been implementation capacity constraint[14]. Consequently, while projects have started, completions have lagged behind. Progress in implementation has been similarly below target for Railways and Inland Water Transport. For inland water, a major constraint is the navigability of river routes due to heavy sedimentation and inadequate capital dredging and maintenance. Safety standards remain weak. The performance of the Chittagong Sea Port has improved that has facilitated international trade, but the services of the Mongla Port have grown more slowly than expected. The agenda for interregional transport connectivity has also moved slower than expected. Although a part of this lag represents regional political constraints, the physical connectivity has also lagged owing to slow implementation of the concerned highway, rail and river links.

On the policy front, progress on the inter-modal transport linkages and progress on PPP based transport network development has lagged behind the target. The PPP activities have shown some recent signs of recovery, which is encouraging. The idea of introducing cost recovery from road users through the institution of a well-designed road user charges still remains to be made effective.On the environmental front, the inadequate progress with expanding water transport services is a concern. The inland water transport is the most environmentally friendly transport mode, yet its shares in passenger and freight services are small and falling[15].

These implementation and policy constraints will be addressed comprehensively under PP2041. The further acceleration in growth under PP2041 and the diversification of the export basket will require strong improvements in trade logistics related to factory to port movements and timely inflow of imports of capital machinery and intermediate imports from ports to factory gate. The capacity and efficiency of the sea and airport services and the ease of internal transportation are critical to the success of the export diversification strategy, for the ease of procuring imported inputs, and for transporting goods and services from the production centres to the consumption centres.

10.3 PP2041 Vision for the Transport Sector

The PP2041 Vision for the transport sector envisages a Bangladesh where:

- There is seamless flow in passenger and goods traffic and transport facilities are available on demand.
- People have efficient choices between different modes of transport facilities at affordable cost and time.
- All transport services are provided competitively with no barriers to entry and exit for service providers.
- There is strong inter-district and inter-regional connectivity with neighbouring countries for passengers, goods and services with choices of alternative transport modes.
- The safety standards are well established and the transport system is accountable through legal provisions for full compliance with safety standards.
- Urban traffic flows are well managed through a combination of mass rapid transit (MRT)/ Metro Rail Network and private options that balance commuter needs for easy transit with avoidance of massive congestion.

14 See "The Final Implementation Review of the Sixth Five Year Plan" (GED, 2018) for a detailed review of the implementation constraint in the transport sector.

15 See "Bangladesh Delta Plan BDP2100" (GED 2018) Chapter 9.

- All parking and traffic laws are enforced with appropriate sanctions for non-compliance irrespective of political or administration connections.

10.4 PP2041 Transport Sector Targets

The transport sector PP2041 Vision is very challenging in the context of the present situation but is very much consistent with the transport environment in a high-income economy. The Vision outlines the end-game in 2041 when Bangladesh aspires to become a high-income country. The transition to that will require appropriate progress at different stages of the time path. The related targets are indicated in Table 10.1[16]. The targets show both the massive growth in the demand for transport services to meet the needs of a growing and transforming economy and major changes in inter-modal transport that is needed to improve the efficiency and cost-effectiveness of the transport system. For domestic travel, the balance of transport services changes in favour of rail and inland water and away from the excessive reliance on the road network. This happens for both passenger movements and freight, but especially for freight. Port and air traffic capacities are projected to grow rapidly to meet the growing demand from higher GDP growth. Urban transport changes are particularly dramatic as mass rapid transit (MRT)/Metro Rail Network transit options are introduced initially in the capital city of Dhaka and adjoining areas but then expanded to all major cities.

Table 10.1: PP2041 Transport Sector Targets

Indicators		FY2018 (Base Year)	FY2021	FY2031	FY2041
Passenger Traffic (billion passenger kilometres)	Roads	169	246	2072	4215
	Inland Water	16	23	252	843
	Railways	10	15	203	562
	Total	195	284	2527	5620
Freight Traffic (billion-tonnes kilometres)	Roads	24	31	71	177
	Inland Water	5	7	20	74
	Railways	2	3	10	44
	Total	31	41	101	295
Air Traffic: (million) (million ton)	Passenger	12.40	14.30	29.1	55.97
	Freight	0.38	0.45	0.65	1.14
Sea Port Cargo Traffic: (million) (million ton)	Container	2.2	3.6	12.5	48.2
	Tonnes	86	122	417	1612
Urban mass transit	No of cities	0	1	8	All major cities
Infrastructure quality	Country ranking	120	118	60	40
	Score	2.8	2.9	4.0	5.0

Source: GED Projections.

10.5 Transport Sector Strategy for PP2041

The transport strategy for PP2041 will build on the lessons of experience of the implementation of the PP2021. An important priority will be to address the implementation gaps of the PP2021 strategy. The other priority will be to address the major institutional constraints that have hampered implementation of transport projects. A third priority is the reform of the PPP strategy with a view to achieving stronger progress under PP2041. Finally, one of the important lessons of the PP2021 is that

16 The basis for the projections is explained in Sarwar Jahan: Developing Transportation and Quality Infrastructure to Support Sustained Rapid Growth and Economic Transportation, Background Paper prepared for PP2041.

Bangladesh needs to be more strategic about identifying major transport projects and then allocating resources accordingly. The priority should be what is deemed as *transformational infrastructure investment.* This initiative already started under the 7th Five Year Plan. The PP2041 will further reinforce it to ensure the timely adoption and completion of the highest priority transport projects.

Strengthening long-term planning and priority setting: The physical targets for the transport sector are large as reflected in Table 10.1. These involve huge financial resources and strong implementation capacity. Both are scarce in Bangladesh. So, careful planning and priority settings are critical elements of the PP2041 transport strategy. Bangladesh has experience in developing long-term transport planning. Building on that, a fresh look will be taken to develop a long-term Transport Sector Master Plan 2041 (TSMP 2041) with international technical assistance. There are several good practice transport planning and development experiences in East Asia, especially Japan, Korea and China. Bangladesh can learn from these experiences. The TSMP 2041 will focus on the major transport investments for Bangladesh for the 2021-2041 periods, provide a picture of the optimal inter-modal transport balance, and identify priorities and a phased approach to their development.

Creating balanced inter-modal transport facility: While roads will continue to dominate the transport network, land constraints, social disruption, environmental concerns and unit cost considerations will require a much more balanced development of the transport network with greater emphasis on inland water transport and railways. Both these modes are under-utilized. PP2041 will give priority to developing these modes to reduce the pressure on roads and also to strengthen inter-modal coordination. The Port to factory gate connection and vice versa via river routes, for example, can be a major improvement in trade logistics. These and other options to improve the intermodal transport balance will be adopted based on an integrated transport planning process that will be regularly updated to reflect the changing traffic dynamics.

Strengthening implementation capacity: Implementation constraints slowed down the implementation of many large transport projects causing cost overruns and delays in project completion. This reduces the quality and rate of return for these investments. The government has put top priority to timely completion of all ongoing projects. PP2041 will further strengthen this by closely monitoring completion of all large transport projects, ensuring timely release of funds, linking new investment approvals to the record of project implementation, improving procurement policies, paying greater attention to project design before project approval, ensuring project implementation readiness as an important criteria for project approval, and strengthening capacities of line ministries and public agencies through improvement in technical capacities based on training and also through recruitment of special skills from private sector on contractual basis. For large and complex projects, international competitive bidding process will be followed and emphasis will be given for turn-key project contracts with strict monitoring and penalty clauses for timely delivery of projects in agreed quality and price.

Ensuring sustainable financing of transport infrastructure: The massive expansion in transport infrastructure implied by the targets set in Table 10.1 will require huge investments. Under PP2021 the government put topmost priority to the development of transport infrastructure and provided adequate funding from the budget. Owing to implementation capacity constraints, funding was often not fully used. As noted above, PP2041 will assign priority to strengthening implementation

capacity. Nevertheless, the volume of funding required is massive and would average around 5% of GDP per year over the FY2021-FY2041 periods. Such large funding cannot be provided by the budget alone. The government recognized this early on and identified Public-Private-Partnership (PPP) initiatives as an important source of transport infrastructure financing during PP2021. As noted, this initiative has been slow to start. Although this has gained some momentum in recent years, the full potential of the PPP initiative remains to be seen. To achieve sustainable financing of this large transport infrastructure programme, the PP2041 will seek to sharply strengthen the PPP initiative with quality international level staffs and address required legal and incentive issues to draw international financing from best possible sources. Attention will be given to proper risk-sharing between public and private sectors in developing financing plans and performance standards, drawing on the lessons of good practice experience.

Developing and implementing key policies for ensuring quality and reliability of transport services: Despite progress, the global ranking of the quality of overall transport infrastructure and individual components is low, which lowers the global competitiveness of Bangladesh and is an important constraint to export diversification and foreign direct investment. PP2041 will place a strong emphasis on improving the quality of transport infrastructure and related transport services. Several constraints reduce quality relating to inadequacy of O&M, lack of service standards, weak safety standards and monitoring, poor accountability for service quality and inadequate monitoring of transport sector related environmental standards. The PP2041 will seek to adopt a number of policies to improve infrastructure and service quality. A proper road user charge will be developed that also accounts for congestion, risk of traffic accidents and environmental pollution and implemented in a phased manner. These resources will be used to improve the maintenance of roads, bridges and highways. The government has already taken a number of policy initiatives to reduce road accidents and enforce them with legal sanctions for non-compliance and liability for accidents. These will be rigorously enforced. Safety standards for inland water transport, rails and aeroplanes will be reviewed and strengthened as appropriate and fully monitored with legal provisions for non-compliance. Environmental considerations will be given emphasis in developing transport network including roads. Fossil fuel will be priced efficiently and consideration will be given to the introduction of a carbon tax. Clean energy transport options such as electric inter-city trains, electric elevated metro rail, underground rail, electric buses, electric cars etc. will be promoted. Service standards will be set for port clearings and rail services in terms of timeliness, online user-friendly ticketing and clearance documentation options, and in-transit services.

Strengthening management capabilities and efficiency of public transport authorities: The proper implementation of the proposed transport infrastructure strategy will require substantial institutional reforms in the transport sector. A particular challenge is to build a quality staff that combines civil servants with special technical skills and strategic professional staff. Another challenge is to establish accountability for performance. This is a generic challenge for overall public administration during PP2041. Several initiatives introduced during PP2021 are underway to strengthen public administration including better staff recruitment, training, incentives and performance evaluation. These initiatives will be further strengthened during PP2041. Over time, as Bangladesh develops and improves the education and skill base of the labour force, the quality of public administration will also improve.

Sub-sectoral strategies

Strategy for road transport: The main elements of the strategy for road transport include:

- Consolidating and upgrading National Highway Networks through multi-laning of existing highways, by establishing access-control long-distance expressways, and by creating service lanes to ease connectivity to local roads. Strict axle load control policy would be established and enforced to reduce road damages caused by overloading. The focus will be given to developing quality infrastructures with hallmark attribute of high-speed mobility facilities. The target would be 80-110 kmph for important highway corridors, which is now operating merely at 25-35 kmph. Bypasses around towns would be planned and provided as access-controlled expressway type facilities with entry/exit at predetermined locations.
- Establishing connectivity with inter-regional highways, economic zone areas, ports, airports, power stations, inland water transport facilities, rail stations and rail freight centres and major tourist resorts to maximize the benefits of the highways system.
- Ensuring inter-district connectivity for all districts that are not connected through the national highway system. This can be achieved by upgrading existing roads and bridges and where necessary by creating new expansions. All inter-district roads would eventually be upgraded to at least 4-lane facilities. To reduce the risks of accidents, there should be a separate lane for slow-moving vehicles.
- Creating highway and inter-district facilities to provide restroom and food facilities for travellers and essential services such as gas stations, emergency repairs, for facilitating highway mobility. While the private sector will make the investment, government policy can facilitate through land allocations, necessary permits and security facilities.
- Upgrading of all zilla and upazilla roads to facilitate easy transport connectivity between production and consumption centres. This will also motivate and influence location decisions for manufacturing enterprises and facilitate labour mobility. These roads would at a minimum be 2 lanes, but in some areas where traffic pressure is intense, they would require 4-lanes
- All village roads would be converted to asphalt standard with at least one lane to facilitate rural mobility of passengers and products. The road connectivity will be a major investment for reducing poverty, improving human development, and promoting rural investment in micro and small-scale non-farm enterprises.
- O&M of highway, bridge, culvert and roads are a high priority strategic element for the road sector. Financing is always a constraint. The development and implementation of a well-designed road user charges will be instrumental in providing resources for road upgrading and maintenance. For highways and major bridges, the use of tolls will provide funding for O&M.

Strategy for Railway Development: A strategic railway modernization and upgrading process would be institutionalized taking a forward view over the next 20 years. It shall comprise a multi-year investment plan fully supported by a credible funding plan. Implementation of this plan will be

given top priority along with adequate funding from the ADP. Emphasis will also be given to cost recovery for railway services. The plan would consist of the following:

- Augmentation of supply (more trains and longer trains) to ensure full satisfaction of demand for both passenger and freight.
- Expand and strengthen railway infrastructure including creating new lines to service demand, track doubling of important corridors, upgradation of all rail lines to broad gauge/ dual gauge system.
- Connectivity to regional train services involving neighbouring countries.
- Introduction and/or upgradation of modern signalling system with relevant safety measures of international standard and introduction of a proper telecommunication system.
- Introduction of mechanized track maintenance system.
- Strengthen O&M practices following internationally recognized safety standards.
- Introduction of high-speed train for passenger transportation for connection among important cities.
- Reduction of turnaround time for the port bound freight trains.
- Introduction of a modern train management system with the Centralized Traffic Control System.
- Redevelopment of stations for smooth flow and comfortable experience of passengers as also with ensuring cleanliness and hygienic environment.
- Ensuring safety and comfort to the passengers and freight transport.
- Upgradation of railway human resources aimed at commercializing services.
- Redesign of coaches to enhance travel comfort and safety.
- Lower port turnaround, loading and unloading times.
- Competitive pricing, ease of ticketing through online purchase and timeliness of service with a view to making a profit.
- Increased capacity on key corridors.
- Increase new train service based on demand.
- Development of new Inland Container Depots.
- Ensure railway connectivity to every district of Bangladesh.
- Reconstruction, modernization and extension of missing links for national, regional and Trans Asian Railway Network.
- Development of dedicated freight corridors.
- Introduction of Commuter Train Services for reducing traffic jam in megacities.
- Introduction of electric traction in Bangladesh Railway.
- Development of new Workshops. Procurement of modern equipment for rolling stocks maintenance.

- Introduction of Intermediate Block System and Installation of Automatic Train Supervision (ATS) including Automatic Train Protection (ATP) with existing CBI and CTC system in the selected corridors.
- Creation of two additional zones and four additional divisions in Railway for better and effective management of railway services.
- Development of railway links with all ports and proposed Deep Sea Port at Sonadia.
- Improved custom clearance arrangements for inter-regional services with neighbouring countries.
- Quality transfer facilities to road transport.
- Strengthen business planning to capture a higher market share of passenger and freight traffic including special services for tourist and high-end users.
- Upgradation/construction of railway training academy.
- Bangladesh Railway to act as a multi-modal transport operator.

Strategy for Developing Inland Water Transport: The geography of Bangladesh connects almost all 64 districts to each other by an interconnected system of major and minor rivers. The major rivers, in turn, provide convenient access to the sea. This massive internet of water connectivity if properly harnessed and nurtured can provide a major development advantage for Bangladesh. The PP2041 will seek to harness this potential for both passenger and cargo traffic. The main elements of the strategy for inland water transport include:

- Establish priority routing based on potential passenger and freight traffic flows and develop those navigability improvements and river port infrastructures.
- Sharply improve the navigability of river routes through strategic dredging, river training, and bandalling. (implementation of BDP2100 may help substantially in this regard)
- Give priority to inter-regional river connectivity to facilitate trade, commerce and tourism.
- Integrate IWT with other transport modes to maximize the benefits of IWT.
- Sharply improve river transport safety standards by setting proper standards and ensuring full compliance. Particular attention would be given to ensuring the river-worthiness of vessels, adequacy of safety equipment including radio communications, and compliance with passenger load regulations.
- Vessel worthiness licensing would ensure minimum service facilities and standards of all vessels.
- Bangladesh Inland Water Transport Authority (BIWTA) will be strengthened with technical staff and qualified inspectors to administer all licensing functions efficiently and on time. Special attention will be given to governance improvements.
- The capacity of BIWTA to undertake hydrological surveys, conduct river training and implement dredging operations will be expanded through upgrading the managerial and technical staff and international training. Side by side, the private sector will be invited to participate in these operations on a PPP basis.

- Given the large need for resources, a proper balance between the public and private sector will be maintained. Much of the infrastructure will be provided by the public sector but most of the passenger and freight services will be provided by the private sector.
- Riverport facilities will be sharply improved with modern service standards for passengers, docking and unloading services for cargo including container cargo, storage facilities and security and rescue services. International river ports of call will also provide customs and inspection services as relevant.
- Pricing policies for passenger and cargo will be commercially determined with a view to enabling a reasonable rate of return on investment.

Strategy for Air Transport: Bangladesh has been experiencing a tremendous increase in air passengers, both domestic and international, in recent years. Airfreight movement has also increased significantly during the last ten years. As income grows, demand will grow further. The response to this surge in air passenger and cargo traffic would require significant investments in terms of construction of new airports, expansion and modernization of existing airports, improvement in connecting infrastructure (road, metro, sea link, etc.) and better airspace management. The PP2041 will adopt the following strategies to deal with the emerging situation in the aviation sector:

- Build a new international airport and other domestic airports to serve the growing air traffic demand of the country.
- Upgrade and modernise all existing airports by creating additional runways and taxiways; augmenting gate and apron capacity to accommodate more aircraft; increase terminal capacity to accommodate more passengers; improve ground traffic management and ancillary aviation processes to ensure quick aircraft turnarounds; improve air traffic and air space management practices and new radar technology; and provide complementary services such as fuel supply, passenger and luggage handling, warehousing, workshop facilities, hangars etc.
- Strengthen security in the airport through the introduction of a modern security system.
- Upgrade non-operational air-strips in the places of economic significance such as ports, tourist places and industrial clusters.
- Strengthen land transport connectivity to the airports to maximize the benefits of air services.
- Establish a specialised air cargo terminal to handle growing air cargo volume and reduce congestion and delays. This will particularly benefit urgent shipments of exports and imports.
- Upgrade air navigation services (ANS) to build seamless air space with expanded capacity and safety. Future ANS infrastructure would move towards greater integration and automation with the implementation of state-of-the-art technologies.
- Improve maintenance, repair and overhaul facilities and services to save cost and time in a highly competitive market.
- Strengthen human resource development in this skill-intensive and competitive line of business.

- Attract private sector participation in airport development.
- Institute appropriate cost recovery policies for airport services. Airport like seaport is a commercial enterprise and will be run and managed on a commercial basis.

Strategy for Maritime Port Development: The international seaborne traffic is growing faster than the GDP growth in Bangladesh. In order to support this growing demand and to become globally competitive, utmost importance would be placed on the development of the Port Sector. The PP2041 strategy for the port sector would involve the following steps:

- Each port would focus on the improvement of productivity both ship berth-day and gang-shift output further through modernisation, induction of more sophisticated equipment in handling cargo, etc.
- Handling operations in selected areas will gradually be outsourced/privatised for injecting more competition and increasing output.
- Efforts would be made for full mechanization of cargo handling operation and movement in major Ports.
- The storage area in the ports will be expanded.
- Efforts would be made to reduce pre-berthing detention and to improve turn -time of vessels through minimization of both port and non-port related factors.
- Required dredging to allow handling of bigger shipping will be carried out.
- Terminal capacity for handling higher cargo off-loading will be expanded.
- Capacity to handle large container traffic will be expanded by constructing deep water-container hub ports.
- Inter-modal transport connectivity with ports will be ensured for speedy forward transport to the final destination of imports as well as easy transit factory gate to port for exports.
- Modern cargo handling techniques would be introduced to improve port performance in the major ports, particularly in the dry bulk cargo, conventional and unitized general cargo trades.
- Port service efficiency and productivity will be enhanced by introducing of state-of-the-art technology/internet to implement integrated Port Operations System and to move towards paperless regime so as to reduce dwell time and also reduce transaction cost to the users. The major areas where such automation is aimed at include: Vessel Traffic Management System (VTMS); Information Technology in Scientific Application, the Cargo/Container handling operations and non-operation area; Surveillance System and Safety & Security System; and Electronic Commerce (EC)/Electronic Data Interchange (EDI).

Strategies for Urban Transport Development: The main objective of urban transport strategy will be to support sustainable urban development. The strategy for urban transport would aim at improving transport and traffic infrastructure so as to meet existing and potential demands, and developing an integrated and balanced system in which all modes (motorized and non-motorized) can perform

efficiently and each mode can fulfil its appropriate role in the system. The main elements of an urban transport strategy are:

- Provision of mass rapid transit (MRT/Metro Rail), both elevated and underground rail, initially in Dhaka City and adjoining areas and eventually extended to all metropolises.
- Provision of Bus Rapid Transit (BRT) that is characterized by dedicated lanes for rapid movement of buses for all divisional cities.
- Creating special lanes for pedestrians and cyclists.
- Promoting high efficiency and alternative fuel vehicles.
- Introduce Intelligent Transportation Systems (ITS) initially in Dhaka and then extend to other metropolises. The major application areas of ITS technology include electronic road pricing, traffic management, integrated ticketing systems for different public transport modes, and traveller information. By 2031, all the major cities and the national highway networks of Bangladesh should be brought under Intelligent Transportation Systems.
- Strengthening linkages with cities and towns around Metropolitan Areas through bus rapid transit (BRT) and mass rapid transit (MRT/Metro Rail). The emphasis would be placed on coordinated development of land use and transportation planning in order to facilitate access to such basic necessities as workplaces and socio-economic facilities.
- Commercial parking facilities will be encouraged through private investment. All parking regulations will be strictly enforced with penalties for non-compliance.
- Time of day use restrictions will be introduced in heavily congested roads. Consideration will be given to introduce entry fee during peak hours for heavily travelled roads.
- The emphasis would be given on the introduction of pedestrian roads in Dhaka City and then extend to other Metropolises.

10.6 Communications

There has been impressive progress in telecommunication as well as digital and print media in recent years. The telecommunication sector has progressed significantly with the involvement of the private sector in the provision of mobile phones in the early 1990s. 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 competition and the quality of programs has generally improved. Radio has also become popular, especially the young generation, with the introduction of FM channels since the middle of the last decade. 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 Bangladeshi newspapers' internet editions. Bangladesh Post Office offers a range of services, including Express Mail Service, an electronic mail service, e-post for internet and e-mail services. Private providers supply high-quality international courier services. All this progress has greatly benefitted trade and commerce, especially online commerce.

This progress has continued during the PP2021 and the strategy is broadly on track. The communications outlets for Bangladesh are multi-faceted and vibrant. The flow of information through social media, video and print media has moved ahead well with huge private investment. This is a major area of success for the PP2021.

PP2041 will build on this success and continue to modernize communications in Bangladesh. The PP2041 strategy will continue to provide policy and institutional support to private investment in expanding telecommunications network and services, boost the expansion of private print, audio and video media, and provide an enabling environment for competitive and healthy expansion of communication services and knowledge and information sharing. Public and national interest will be protected through regulations that ensure that information exchange is fact-based and prevent improper use that fans social unrest or creates law and order breaches. The PP2041 will implement the provisions of the Right to Information Act that supports the growth of an informed and democratic society.

Postal services will continue to be modernized through faster transfers of mail with greater reliability of services. Private services in partnership with global carriers will continue to be encouraged. Service modernization through the use of digital technology such as mail tracking will be strengthened.

CHAPTER 11

MANAGING THE URBAN TRANSITION TO A HIGH-INCOME ECONOMY

.MANAGING THE URBAN TRANSITION TO A HIGH-INCOME ECONOMY

11.1 Urbanization and Development

Bangladesh has 516 members of urban centers throughout the country. The capital city Dhaka is a megacity with two city corporations. There are seven divisional towns that are city corporations. Besides that three important district towns near Dhaka (Narayanganj, Cumilla and Gazipur) have been transformed as city corporations. The rest 53 district towns out of 64 districts excluding the city corporation areas are district level towns. There are 492 Upazilas in the country. Two hundred ninety three Upazila towns are municipalities. Besides the Upazila towns, there are thirty eight urban centers near port, industrial zones and important commercial areas that are declared as municipalities. The rest are Upazila headquarters towns.

According to census of 2011, the population strata of the cities are as follows:

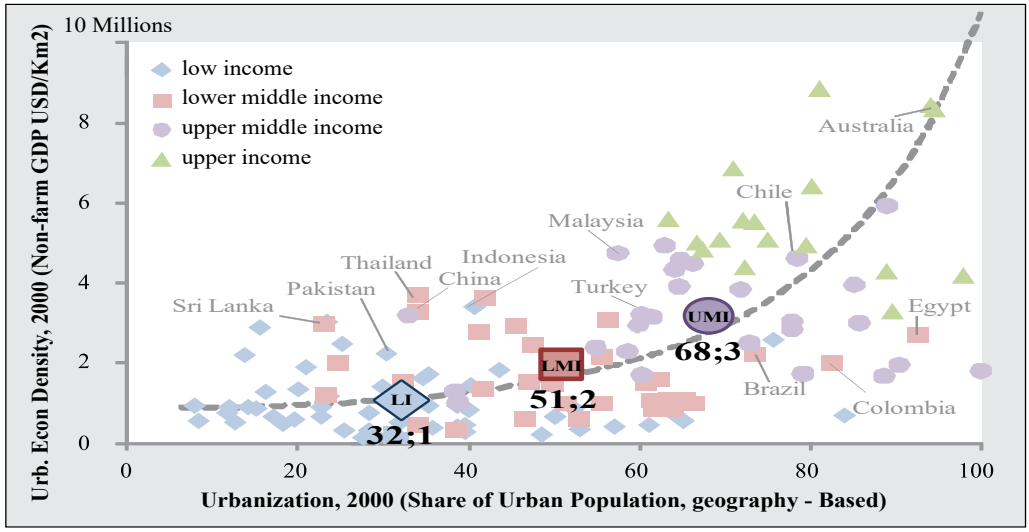
- More than 1 million population- 2 Cities (Dhaka and Chittagong)
- Within 500,000-1000,000 -6 cities (Rajshahi, Sylhet, Khulna, Gazipur, Narayanganj, and Bogra)
- Within 200,000-500,000 -10 cities (Savar, Mymensigh, Barisal, Rangpur, Cumilla, Kustia, Jashore, Cox's Bazar, Feni, Manikganj)
- Within 100,000-200,000- 25 cities mostly the greater districts, districts towns and Upazila level towns such as Chowmuhuni, Bhairab, Sreepur, Saidpur and Tarabo
- Within 50,000-100,000 - rest districts towns and important Upazila level towns
- Within 10,000-50,000 – Upazila level towns

(Narayanganj city corporation includes previous Narayanganj, Shiddirganj and Kadamrasul municipalities. Gazipur city corporation includes previous Gazipur and Tongi municipalities)

- The government has a program of rural transformation under "My Village – My Town" to provide quality civic amenities at rural level to stop migration to the cities.
- The government is planning to set up a good number of universities and Medical Colleges at district level to provide healthcare and education at district level.
- The government is planning to set up hundred economic zones throughout the country to create new employment. There is a good opportunity to develop the cities near the economic zones. For example, JICA is going to set up townships near the Maheshkhali-Matarbari economic zones.

Urbanization and development are highly and positively correlated. Cities lead the growth engine owing to high economic density ((value-added per unit of space) and proximity to the factors of production. It is no accident that high- and middle-income countries are more urbanised and their urban areas have higher economic densities than low-income countries (Figure 11.1). The correlation between urbanisation and GDP is indicative of the productivity advantage of urban areas.

Figure 11.1: Urbanisation, Urban Economic Density and GDP (2000)

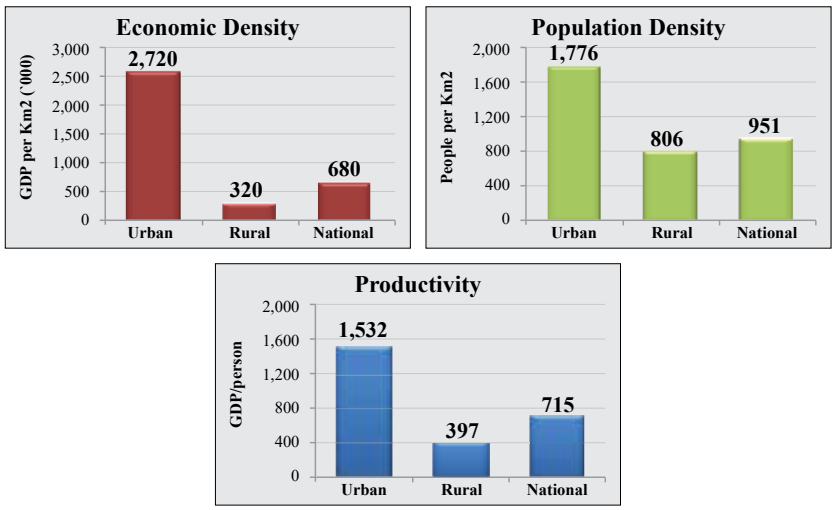


Source: World Bank 2012. *"Bangladesh: Towards Accelerated, Inclusive and Sustainable Growth—Opportunities and Challenges." Report No. 67991. World Bank, Dhaka*

Bangladesh is no exception (Figure 11.2). The urban-rural value-added and productivity differentials in Bangladesh are larger than the population density differential (World Bank 2012).

- Population density in urban areas (1,800 people per square km) is twice as high as in rural areas (800 people per square km). As compared to this, urban economic density (USD 2.7 million per square km) is eight times as high as rural economic density (USD 320,000 per square km).
- The average GDP per capita in urban areas (USD 1,500) is almost four times as high as in rural areas (USD 400).
- It is obvious that urban areas have been the growth centres for Bangladesh.

Figure 11.2: Rural-Urban Density and Productivity Differentials in Bangladesh[17]



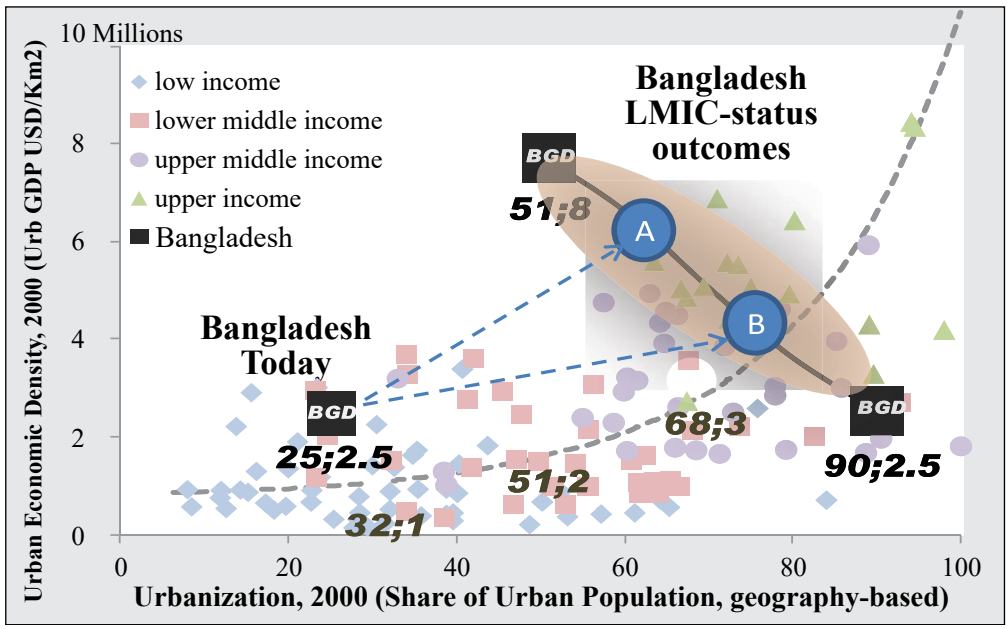
Source: World Bank (2012)

17 Based on FY2010 data.

Urbanisation and economic growth will, therefore, go together in the future as Bangladesh aspires to attain Upper Middle-Income Country (UMIC) status by FY2031 and High-Income Country (HIC) by FY2041. But there are two possible spatial economic paths to UMIC and HIC for Bangladesh (Figure 11.3). The first (Path A) entails a continued shift toward higher-value-added products and services in the existing urban growth centres (Dhaka and Chattogram). The second (Path B) calls for higher diversification into non-farm production and employment outside Dhaka and Chattogram. This later strategy results in more diversified urbanisation with a greater economic role of other cities.

While both paths are possible, as exemplified by the experience of several HIC and UMICs, the present chaotic experience with concentrated urbanisation in Bangladesh (Path A) suggests that Path B that entails a more diversified pattern of urbanisation would appear to be a less risky option.

Figure 11.3: Urbanisation Path to UMIC– A Scenario Analysis[18]



Source: World Bank (2012)

The pattern of urbanisation is an important determinant of the GDP growth rate for many reasons:

- Private sector investment is necessary to accelerate growth.
- Urban areas are attractive locations for firms because they provide better access to factor and goods markets, infrastructure and proximity to services.
- But urban centres also tend to be costly locations as concentration increase the cost of land and wages.
- If urbanisation is not properly managed, it can lead to congestion, pollution and inefficiencies in service provision. These could choke off the growth engine.

18 The original World Bank analysis was done in 2012 and used 2021 as the reference point for MIC. Bangladesh in 2012 was a low-income country (LIC). Bangladesh achieved lower middle income (LMIC) status in 2015. It now aspires to move to UMIC and HIC. However, the underlying analytical framework for urbanization scenario remains unchanged.

11.1.1 Recent Urban Sector Developments

Over the 50 years during 1961-2011, the Bangladeshi population nearly tripled in size, growing from 51 million to 150 million. The urban population increased nearly fifteen-fold, galloping from less than 3 million in 1961 to 42 million in 2011. Owing to these population dynamics, the share of the urban population grew from around 5 percent in 1961 to 28 percent in 2011. It is projected to have reached 35 percent in 2019. The urbanization trend started early from the 1960s and gathered momentum in the 1970s after independence. The growth of urbanization was particularly rapid between1974-1981. Since 2001 the pace has stabilized at around 3%, but still 2.5 times faster than the national population growth.

A major characteristic of the ongoing urbanisation experience in Bangladesh is the heavy concentration of urban population in the capital city of Dhaka. Along with population, there is also a heavy concentration of economic activities in Dhaka. The next largest city is Chattogram, which is about a third the size of Dhaka. It is a port city and has also attracted considerable private sector interest. Dhaka and Chattogram together have served as the primary growth centres for Bangladesh over the past two decades. The other six divisional city centres, Rajshahi, Khulna, Sylhet, Mymensingh, Barishal and Rangpur have failed to take-off as growth centres.

Although the urban areas, especially Dhaka and Chattogram metropolitan cities, have been the leading growth centres of Bangladesh, urbanisation has been yet haphazard. Some of the characteristics of this disorganized and unplanned urbanization have been particularly worrisome, especially regarding urban transport, housing, basic urban services (water supply, sanitation, drainage and solid waste management) and the urban natural environment (air and water pollution), although progress with urban poverty reduction has been solid.

11.1.2 Urban Sector Strategies and Policies under PP2021

The PP2021 recognized the gravity of the urbanization challenge and its long-term nature. The strategy called for a major overhaul in the approach to urbanization. It emphasized balanced development of many urban centres instead of Dhaka-centric urbanization. It suggested a major change in the urban governance by emphasizing political, administrative and fiscal decentralization and participatory development. It suggested improvements in land use planning and allocation. It laid focus on improving the urban physical environment. It advocated a major and sustainable expansion in urban services through a combination of public and private investments. Taken together, this constitutes a comprehensive and balanced approach to urbanization and much different from the strategy prevailing in FY2010.

Notwithstanding, this visionary approach to urbanization, the PP2021 urban strategy has not been well implemented. Substantial investments in urban infrastructure and services have been made but the large backlog of unmet demand and the continued rapid growth of urbanization have outstripped those investments. At the institutional level, while progress has been made in implementing political decentralization on the basis of elected management of City Corporations and Municipalities (Paurashavas), nothing else has moved. The urban bodies have very little mandated responsibilities with considerable overlap with other government entities. Fiscal decentralization is yet to happen. Consequently, urban bodies remain heavily dependent on national government funding. Own

resource mobilization is very low (collectively about 0.16% of GDP), which does not even meet their current expenses. Unbalanced urbanization has further accelerated as Dhaka's primacy increased further between FY2010 and F2018. Urban traffic congestion has further intensified. The urban slum population has grown. Importantly, the urban environment continues to deteriorate owing to difficulties in managing urban sanitation and solid waste. Drainage problems have intensified especially in Dhaka. A few hours of heavy rain create long hours of traffic jam in Dhaka city due to road-level waterlogging.

The urban agenda has clearly assumed added urgency. Some high-level policy decisions relating to urban governance, especially decentralization, is critical to move forward with the urban agenda. Decentralization reforms must address the assignment of responsibilities with no overlaps and financial decentralization. There is considerable good practice international experience that Bangladesh can draw on in this regard.

11.2 PP2041 Vision and Targets for Urbanization

Given the historical positive correlation between urbanization and development, it is natural to expect a major transformation of the Bangladesh urban sector as an essential part of the strategy to transfer to a high-income economy. Consistent with global experience, the urban sector will lead the way to the journey to upper-middle-income country status by FY2031 and eventually to high-income-economy by FY2041. The characteristics of urban Bangladesh in 2041 will be like the urban environment found in present-day high-income economies.

11.2.1 PP2041 Vision for Urban Sector

Specifically, the PP2041 Vision for the urban sector is to:

- Have an economy where some 80 percent of the population lives in urban areas and enjoys a quality of life that is comparable to those found in the present-day high- income economies of North America, Europe and Asia.
- An urban physical environment where there is a proper balance between ecology, the natural environment and needs of the urban population. In particular, all cities will be flood-free with proper drainage, modern sewerage and proper waste management.
- An urban social structure where there is no incidence of absolute poverty, there are no slums and every household has a basic minimum housing quality.
- An urban service industry that provides quality urban infrastructure and urban services on demand and in good quality.
- An urban governance structure that is elected by the residents, is responsive to the needs of the residents and is largely self-financing with a healthy and sustainable combination of urban betterment taxes, predictable national government transfers, cost recovery from services provided and responsible borrowings.

11.2.2 PP2041 Core Objectives and Targets for the Urban Sector

To translate this Vision into indicators of progress which can be monitored, the targets for the urban sector are shown in Table 11.1. The objectives and targets are set in a manner that these are

consistent with the urban environment found in high-income countries. These targets and objectives are necessary to also ensure the sustainability of the Bangladesh urban environment in terms of urban governance, urban financing, and the urban natural environment.

Table 11.1: PP2041 Core Objectives and Targets for the Urban Sector

Objectives/Targets	2018 (Base Year Values)	FY2041 Values
Share of urban population in total Population (%)	30	80
Number of primary cities	2	8
Share of Dhaka Metropolitan City in total urban population (%)	33	25
Share of 7 other primary cities in total urban population (%)	23	30
Percent of households with electricity	90	100
Percent of households with tap water connectivity	40	100
Percent of households with water-sealed sanitary toilets	42	100
Percentage of households with sewerage connection		100
Incidence of urban poverty (%)	15.7	0
Percent of household living in slums (UN definition)	55	0
Percent of urban centres with modern waste disposal facilities	N/A	100
Percent of urban centres with wastewater treatment facilities	N/A	100
Share of urban LGI spending in total government spending (%)	5	25
Urban LGI spending as percentage of GDP	0.7	8
Urban LGI taxes as percentage of total taxes	2.3	20
Urban LGI taxes as a percentage of GDP	0.2	4
Green area Dhaka (square meter per capita)	N/A	5
Green area other 7 major cities (square meter per capita)	N/A	12
Percent of urban water bodies preserved with 100% compliance with water quality standards	0	100
Air quality (annual average, µg/m3 PM 2.5)	86	10
Percent of cities flood free with proper drainage	0	100
Compliance with zoning laws (%)	N/A	100
Compliance with parking laws (%)	N/A	100
Urban streets/roads with modern traffic signals	N/A	100
Primary cities with mass transit options	0	8

Source: GED Projections

11.3 Strategy for Urban Reforms

The PP2041 strategy for the urban sector will draw on the lessons of good-practice international experience to move forward.

11.3.1 The Lessons of International Experience

The Mercer city Livability index and other similar indices suggest that there are good examples of countries that have urbanized well and developed many efficient and high-quality cities. Considerable planning, strategies, institutions and policies have enabled this progress. Bangladesh will learn from these experiences and draw proper lessons in developing its own strategies and reforms for the PP2041. Some of the basic lessons are as follows;

1) High quality cities are characterized by a governance system that entails democratically elected, strong and accountable city governments. These governments are independent of the political dominance of the national government and are only accountable to the residents of the city.

2) City governments have well-defined responsibilities that are enshrined in the legal framework. These responsibilities do not change based on national or local election results. There is no conflict or overlap in delivering service with higher levels of government.

3) The coordination mechanisms with higher levels of government in the management of common areas are well defined within the principle that matters that involve exclusively the interest of the city are primarily the responsibility of the city.

4) Financial autonomy of cities is ensured through a legally defined financial framework that involves sharing of taxes, national grants and market borrowing.

5) User charges play a major role in city finances.

6) To protect public interests and provide a common reference point for the country, minimum standards are defined for such issues as environmental protection, water quality and air quality and these standards are monitored by the higher government.

7) To ensure an adequate supply of certain merit/public goods, the national grant system is used for co-financing or as incentive payments.

8) Urban planning and strategy are a shared responsibility between the city and higher-level governments. At the city level, the planning process is participatory with a well-defined and structured consultation process with the residents.

On substance, good practice international experience suggests that there are two big picture agenda that will have to be addressed. First is the need to address the urban finances issue. And second is the need to tackle the urban governance challenge. The two are inter-related and will have to go together. The basic challenge is to establish a system of accountable city government that is publicly elected, enjoys considerable political and administrative autonomy, is responsive to the needs of the residents, and has considerable financial autonomy.

11.3.2 The Urban Reform Law

The implementation of these reforms requires proper changes in the legal framework that clearly defines the roles and responsibilities of the urban LGIs in a manner that avoids duplication, especially from competing bodies of the national government. The Government would establish a National Task Force of urban experts to review relevant international experiences and give a recommendation to the Cabinet for review and approval. Once done, this would become legally binding through an Act of the parliament. The Act would also clarify the degree of political and administrative autonomy granted to urban LGIs and the financing options. The level of fiscal decentralization granted to the urban LGIs would be a part of the Act and will define the basis for national transfers to urban LGIs, taxes assigned to them and authority for public borrowing.

11.4 Towards an Urban Financing Strategy

11.4.1 Reform of Urban Finances

The financing needs for urban infrastructure are large. It will be nearly impossible to meet the financing requirements based simply on transfers from the national government. International experience shows that the strategy for urban financing needs to combine taxes, service charges, predictable transfers and responsible borrowing. PP2041 will follow a similar approach.

Tax reforms and fees: Since at present the tax administrative capacity is generally weak even at the national level, the scope for decentralisation of tax responsibilities to LGIs is limited in the near future. However, in the property tax, the LGIs have a potentially powerful source of revenue that must be better assessed, collected and used. Once the property taxes are well developed and the urban governments gain experience, other options including urban income taxes could be considered.

- The first stage would focus on a major revamping of property taxes. A properly designed property tax could yield 1.0-1.5 percent of GDP equivalent of tax revenues that will revolutionize urban LGI financing. This compares with a mere 0.16 percent of GDP yield presently.
- Technical assistance will be sought from national institutions to help LGIs develop an effective system of property taxes.
- Service fees and charges have grown significantly, but they still account for only 0.14 percent of GDP. With better service, urban LGIs should be able to increase resources from this source equivalent to about 0.5 percent of GDP by FY2020 and 1.0% of GDP by FY2031.
- Together, the property tax and the service fee and charges would help jump-start the fiscal autonomy of urban LGIs in a substantial manner.
- Over time, consideration would be given to raising additional income taxes, over and above the national income taxes, as in other advanced economies like the USA.

Reform of government transfers: Government transfers would be reformed to assign greater transparency and predictability of the transfers. The transfers will be matched to assigned responsibilities. The transfer system would be enshrined within a legal framework to ensure stability and predictability.

- There would be a much better balance between spending by national ministries and LGIs based on a clearly articulated devolution of responsibilities and matching transfers that is enshrined in the legal framework.
- In designing the transfer system, the basic principles would include factors relating to population, poverty, endowment and performance. Cities that have a larger share of the population, higher poverty and weaker options for local tax mobilization will receive larger grants. This equity principle would facilitate the growth of lagging cities like Khulna, Mymensingh, Barishal, Rangpur, Rajshahi and other various relatively larger categories of municipalities.
- A two-tier transfer system combining equity and incentives (performance) would be used to promote competition among cities. Thus, cities that are innovative and make a special effort to improve its efficiency of service delivery and governance would have opportunities to tap special incentive funds from the national government.
- The national budget would also earmark special-purpose funds to promote national development goals related to health, education, environment, social protection and poverty reduction.

Reform of urban LGI borrowings: Borrowing is not a risk-free option and requires careful management with special attention to the debt repayment capacity of the borrowing entity.

- Presently, all transfers (grants or loans) come from the national budget. This will continue in the interim owing to weak finances and poor capacities of urban LGIs.
- Over time as urban LGIs gain experience and capacity, the borrowing option will be opened for capable and strong LGIs with debt-servicing capacity. Borrowing can be encouraged for income generating services like water supply, commercial market/centre development, public parks and entertainment centres.
- In general, the loan financing should be done responsibly based on well-designed high-return projects and in line with debt-servicing capacity of the concerned LGI. The Ministry of Finance will not underwrite such borrowing but may support such borrowing by credible urban LGIs by offering tax-free status to these bonds.
- The borrowing strategy of urban LGIs will be made fully consistent with national debt management. The Ministry of Finance will monitor such borrowing and take corrective actions as necessary to ensure full consistency with the national debt strategy.

11.5 Urban Governance Reform

The PP2041 recognizes the need for decentralized and autonomous urban governments as a key part of the political and administrative layout underlying a HIC. The main strategy and policy question are how quickly this transition can start along with sustained efforts to carry through this critical institutional reform.

11.6 A Strategy for City Reforms

A sound strategy for reforming city management calls for a three-pronged approach: (i) redefining public-private roles with a view to strengthening this partnership for better services; (ii) strengthening capabilities of public urban service institutions; and (iii) establishing an accountable city government.

11.6.1 Public-Private Roles and Partnerships

Capacity constraint to service provision in global megacities is not uncommon. Many cities have found it helpful to redefine its role to provide only those basic services that are public goods and let the private sector handle commercial activities. PP2041 will follow the same principle for Bangladesh. A vibrant private sector has already emerged in the delivery of telecommunications, transport, housing, media, education, health services. There is also a strong partnership between the government and NGOs in the delivery of basic education services. But for other commercial services such as electricity and gas, they remain public monopolies with mixed performance, weak finances and limited investment. For core urban services such as housing, transport, water supply, sewerage and solid waste disposal, the picture is also mixed. The private housing market is generally buoyant and competitive but it is constrained by the high cost of land, inadequacy of long-term housing finance, an inefficient land market and other enforcement problems.

Given the magnitude of the housing challenge facing Bangladesh, a rapid reform of the housing market is essential. The private sector will need to play the dominant role. The government will

support this by improving the functioning of the land market, helping develop the long-term mortgage industry, developing urban transport and a policy of tax/subsidy to encourage low-cost housing supply is imperative. Land market reforms include digitization of land records, simplification of land transactions including registration and reduction of financial cost of land transfers. Efficient urban transport can be very helpful in deconcentrating city centres and developing suburban areas for residential purposes. The government will also help ease the housing constraint by releasing government-owned land for low-cost housing and relaxing space use restrictions for this type of housing.

Regarding the mortgage industry, the main challenge is to develop housing finance programs that provide flexible sources of financing at relatively low rates of interest. The Bangladesh Bank will commission a study that looks at the international experience to facilitate this. In high-income countries, housing finance is the most attractive business given the safety of the investment and as such, the availability of low-cost long-term finance is abundant and competitive. There is also a secondary market for housing mortgage that allows private mortgage companies to leverage their finances.

Fiscal incentives like tax write off for interest payments, low taxation of capital gains from primary residence sale and capital/interest subsidies for low-cost housing are possible ways to spur home ownership. Finally, policy attention would be given to creating incentives for the development of low-cost housing solutions using new technology and environment-friendly construction options. Bangladesh has many civil engineering and architectural talents. The government will support research in new design and technology for low-cost housing that is consistent with the natural climate and hazard risks. There is considerable research ongoing in India in the context of its Housing for All by 2022 Initiative[19]. Bangladesh will draw on this experience.

Regarding transport, while the road network infrastructure is provided by the public sector, transport service is largely provided by the private sector along with limited public bus service. The lack of proper mass transit is a major problem for Dhaka and other large cities. For private buses, inadequate road network, poor traffic management and weak regulations related to service and safety standards have contributed to low service quality. Over-crowding of buses is overwhelming causing serious safety concerns. Moving forward, the highest priority is to establish a system of mass transit for all large cities starting with Dhaka. Considerable improvement will be made in urban traffic management relating to traffic signals, strict enforcement of traffic laws, enforcement of parking restrictions, and time of use of congested traffic corridors. There is adequate scope to improve the private supply of private transport options and improve safety standards through tax breaks to bus/taxi service providers and regulatory reforms on seating capacities and quality of private transport.

For piped water and modern sewage service, the public sector is the only source of service. Autonomous service agencies called Water and Sewerage Authorities (WASA) exist in four major cities of Dhaka, Chattogram, Rajshahi and Khulna. All three provide piped water but only DWASA provides limited modern sewage service. In other cities, piped water is provided by the municipalities and concerned city corporations. Private water provision as a commercial activity is absent in the urban areas.

19 "The Housing for All By 2022" Initiative was launched by the Government of India in 2015.

Private hand tube wells and groundwater extraction through motorised pumps are common sources of water supply for areas not served by municipalities or where this supply is unreliable. Since a modern sewage system whereby the human waste is treated before release to water bodies does not exist in most urban centres of Bangladesh including Dhaka, much of the human excreta goes into underground pits or in portable containers. These are mostly serviced by private service providers. Garbage disposal is also primarily provided by the city corporations/municipality. Organised private service delivery does not exist, although small-scale and informal private services of garbage disposal prevail in areas not served by public service providers or as an added community initiative to keep the neighbourhood clean.

PP2041 strategy to address the water and sanitation problem is to sharply expand public services while also encouraging private supply. This will be done by instituting proper regulations and appropriate cost recovery policy. Proper regulations for waste/sewage disposal and coordination with public waste/sewage treatment facilities are essential to preserve health safety.

11.6.2 Strengthening Public Urban Service Agencies

While private participation in water supply and disposal of solid waste will need to be introduced and promoted, a top priority for PP2041 is to institute adequate supply of modern sewage facilities in all cities. The serious health risk from water pollution due to inadequate management of sewage and solid waste is unacceptable and must be addressed on a war footing. Sewage disposal and its proper treatment is a prime example of public good and it is best provided by the public sector. All City Corporations and larger Municipalities will be equipped with WASA type institutions that will have accountability for piped water supply and sewage disposal. Similar institutional arrangement for solid waste management is important. Adequate capacity development of the municipalities including reformation of their organogram can be considered to plan, guide and monitor solid waste management. Existing WASAs would be re-assigned to the respective City Corporations where they provide service. This is necessary to strengthen the accountability of the urban LGIs and make them responsive to the needs of the residents they oversee. Cost recovery policies would be strengthened to improve the financial viability and service delivery capacity of these service agencies.

Proper disposal of sewage and solid waste requires modern waste treatment facilities. There is considerable global progress in this area and Bangladesh will learn from these experiences. Coordination between the Ministries of LGRD and Environment and urban LGIs in the matter of standards and waste disposal channels would be ensured.

In urban transport, the highest priority is to establish efficient mass transit systems. This can be based on surface high-speed urban rails or underground rail system. These high-priority urban investments need to fast-tracked starting with Dhaka but extended to all the 8 divisional city headquarters. Since these are highly capital-intensive enterprises, the funding will come from the ADP or through PPP options. However, pricing policies for services must provide for coverage of all O&M costs to ensure their sustainability.

11.6.3 Towards an Accountable City Government

The third and most fundamental leg of the reform strategy is improved city governance. The reform strategy would seek to address the key constraints to the effective functioning of the city government: unclear mandate and service responsibilities; lack of accountability; weak finances and financial autonomy; proliferation of service agencies with poor coordination and control; and weak management. Fundamentally, key functions will be devolved to city governments and, in turn, city governments would be organised to best manage these functions - a two-step process that will be sequenced and managed jointly between national and city governments in a strategic way.

The other critical reform discussed earlier is the devolution of financial autonomy. City government's finances would be well defined based on assigned responsibilities and a proper balance of assigned taxes (principally the property tax), block grants from the national budget, user charges and city government bonds.

Devolving authority to the city level raises the important question of how to organise a city government to manage those responsibilities. Based on international experience, the options range from some form of non-metropolitan government to various forms of metropolitan governments with economic decentralisation as the guiding principle. The national task force of experts charged with the responsibility of developing the fiscal and administrative decentralization strategy will also prepare a strategy for organizing the city governments based on good practice international experiences for review and approval by the cabinet. The Local Government Division will enact/modify/prepare rules and regulations regarding all the proposed initiatives.

11.7 Coordination of City Agenda with the National Agenda

While the system of devolution will need to ensure that there is no conflict between the city agenda and the national agenda, there will be common areas where coordination is necessary. These typically involve the setting of standards for environmental protection, water quality, air quality, zoning laws, and safety standards. For all matters relating to national interests, the national laws and regulations will prevail and all cities will be required to comply with them. But the implementation of these laws, regulations and standards will often require proper dialogue and consultation. The concerned line Ministries in coordination with Local Government Division will take the lead on these matters with participation by city governments.

11.8 Planning and Monitoring

Presently the Ministry of Local Government takes the lead in planning and investment of major urban projects. It allocates funds to all local governments and supervises major service institutions like the Water and Sewerage Authorities (WASAs). Under the envisaged reforms the Ministry's role will change drastically. With devolution to the city governments, most of the budget allocation and investment financing roles of the Ministry will disappear. The WASAs will devolve to city governments. For all cities, city planning will become an integral part of the city government. Thus, RAJUK will become a part of the Dhaka city government. Survey of Bangladesh (SoB) will be responsible for geo-spatial data which is required for sustainable city planning and development.

The major role of the Ministry of Local Government will be planning of the entire urban scenario, policymaking to facilitate urban development based on the approved national scenario and monitoring the sound implementation of urban development. The Ministry will take the lead in defining and designing the national urban priorities and related urban reforms and ensuring their proper implementation in close consultation and coordination with the city governments. It will monitor progress with urbanization, identify emerging issues and challenges and seek to resolve them in consultation with the concerned city governments.

On the financing side, there will be a more limited but strategic role. This will involve the administration of two types of funds: the incentives fund and the special programs funds. The incentives funds will seek to encourage competition among cities in innovating in service delivery and taking risks. The special programs funds will involve providing matching grants to cities to adopt and implement programs identified as priorities by the national government.

The precise roles and coordination mechanisms on urban planning and monitoring will emerge from a careful review of relevant international experiences. There is no one size fits all template available. Social and political realities and implementation capabilities will play important roles in evolving the devolution of planning functions. What is important is to define clear responsibilities and accountabilities along with proper coordination mechanisms with different levels of government. Involvement of citizens in the planning process is equally important.

11.9 PP2041 Urban Sector Financing Requirements and Options

The funding needs of the urban sector are large. However, the proposed governance and financing reforms suggested by the PP2041 Strategy above should provide a solid foundation.

Presently, the only source of public investment spending on urban infrastructure is the national government through the Annual Development Programme (ADP). The total investment in urban infrastructure (housing, water, sewerage, and city corporation/municipality services) amounts to about 1.2% of GDP. The urban LGIs cannot even meet their operational funding requirements from their own resources and there is no investible surplus from own resources. Private urban services mainly involve housing and urban transport services (private buses, CNG three-wheelers and rickshaws).

Two other financing strategies will be necessary. The first involves private financing and the second involves a strong cost recovery programme for urban services. Nevertheless, the ADP funding of urban sector is expected to increase from 1.2% of GDP in FY2017 to 2.0% in FY2031 and 2.5% in FY2041. Most of these resources will be transferred to city governments as block grants or through development projects based on legally mandated formulae. A small percent will be transferred as incentive funds.

11.10 Private Provision of Urban Services

Presently, housing services are mostly provided by the private sector. The private sector also provides urban transport services. The investment for the private sector is estimated at 1.2% of GDP in FY2018. For the future, this should grow substantially to provide the growing services needs of

the modern Bangladesh urban sector. Specifically, private financing of urban services is projected to grow from 1.2% of GDP now to about 2% of GDP by FY2031 and 3% of GDP by FY2041. Much of the additional investment will be in housing. Other areas where private provision can prevail include urban transport, urban water supply and solid waste disposal.

11.11 Self-Financing and Cost Recovery

Presently, there is negligible self-financing of urban infrastructure from own resources of the urban LGIs. The resource mobilization strategy for urban LGIs identified above will play a major role in changing this. Of special mention in this regard is cost recovery. While local government tax resources will help finance operating costs of the city government and spending programs on public goods like local roads, drainage systems, parks and maintenance of water bodies, cost recovery will play a dominant role for such services as water supply, sewerage and solid waste disposal. The cost recovery policy will initially target 100% recovery of operations and maintenance. Over the longer term, the cost recovery will also target a substantial recovery of capital costs. As self-financing improves, urban LGIs can also undertake limited borrowing for quality infrastructure projects.

Table 11.2: PP2041 Urban Sector Financing Requirements and Options

Funding Sources/Options	FY2020	FY2031	FY2041
Annual Development Program (% of GDP)	1.5	2.0	2.5
Self-Financing (Cost Recovery) (% of GDP)	0.3	1.0	1.5
Private Investment (% of GDP)	1.5	2.0	3.0
Total Investment (% of GDP)	3.3	5.0	7.0
Total Investment (bllion Taka at 2017 Prices)	806	3010	10437

Source: GED Projections

CHAPTER 12

ENSURING SUSTAINABLE ENVIRONMENT CREATING A CLIMATE RESILIENT NATION IN A DYNAMIC DELTA AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

ENSURING SUSTAINABLE ENVIRONMENT, CREATING A CLIMATE RESILIENT NATION IN A DYNAMIC DELTA, AND UNLOCKING THE POTENTIAL OF A BLUE ECONOMY

12.1 Overview

The evidence from global experience, as well as the experience from Bangladesh, suggests that climate change is a real threat to global and national level prosperity. With a population of 170 million crammed into a total space of 147 thousand square kilometres including rivers, Bangladesh at around 1200 people per square kilometre is the most densely populated country in the world, excluding some small island economies with less than 2 million people and the city-states of Hong Kong and Singapore. Owing to the deltaic formation of the country, the configuration of the rivers and climate change, Bangladesh has been ranked as the 5th most vulnerable country among 171 countries in terms of risks from natural hazards. Ignoring the 2 small island economies of the Pacific Ocean (Tonga and Vanuatu), the risk rating surges to the 3rd most natural disaster risk-prone country in the world, just behind the Philippines and Guatemala.

Tidal surge, salinity, flooding, river erosion, and cyclones are regular features of Bangladesh. These features pose a continuous challenge to food security for the country and livelihood for a large part of the rural population. Growing risk of sea level rise threatens to engulf a considerable area of the coastal belt that could displace millions of people living in the coastal districts. Sea level rise along with drying up of upstream freshwater flows in rivers in the Southwest are causing problems for agriculture and freshwater supply. Rising temperature threatens to increase monsoon rains causing river overflow and higher incidence of flooding; temperature rise also threatens to damage crops and contribute to health problems. In parts of the country over-exploitation of groundwater with low rain owing to climate change threatens to weaken the surface aquifers that could create water-shortage for irrigation-fed agriculture in the Northwest dry zone of Bangladesh. In the urban areas, the water tables in many parts have already sunk very low owing to over-exploitation of groundwater and inadequate re-charging. Arsenic contamination threatens many water supply sources. Assuring adequate water supply to a growing urban population and expanding industrial and commercial activities will be a major challenge in moving forward. Unless these vulnerabilities are managed and addressed comprehensively, Bangladesh faces serious downside risks to food security, the growth momentum and poverty reduction efforts.

Along with these challenges, the delta opportunities are many. The soil and water combination of Bangladesh makes it a highly fertile land with multiple cropping opportunities. Almost all districts are connected with one another and with the growth centres of Dhaka, Chattogram and Khulna through river ways. The inland waterways provide an environmentally friendly and low-cost transport option for both passengers and cargo for the country as a whole but especially for the rural poor. The plentiful of rivers, fresh wetlands, and lakes provide ample scope for fishery resources. More recently, Bangladesh has been increasingly exploiting the open access to the sea through growing trade and commerce. Marine fishing is becoming a major source of fishery resources. The full benefits of the blue economy remain to be exploited.

Armed with these geographic facts, the PP2021 sought to initiate a comprehensive long-term approach to address environmental degradation and climate change through a mixture of laws, regulations, policies and programmes. The PP2021 recognized that unless these constraints were integrated properly with the development strategy, the sustainability of development will be threatened. PP2021 also sought to exploit the benefits of the blue economy with the focus on the shipping industry, port services and marine fishing.

12.2 Implementation Progress with PP2021 Environmental and Climate Change Strategies and Policies

Sound environmental management is a complex subject. The outcomes are long-term in nature and true progress is hard to measure based on a limited number of indicators. A detailed assessment of the status of environmental progress in relation to Bangladesh's development needs, in the context of international progress, was undertaken in the Final Assessment Review of the 6th FYP[20]. The analysis shows a mixed picture. The 6th FYP systematically integrated environmental degradation and climate change in the medium-term planning process and identified specific objectives and strategies for environmental protection and climate change. The global attention to climate change and the risks presented to Bangladesh have caught the imagination of the policymakers at the highest level and there is a much more serious effort now underway to come to grips with this long-term challenge. Bangladesh participates actively in all global discussions on climate change and is a signatory to all related global action programmes.

Many laws and regulations have been enacted over the years to protect the environment and programmes and policies are in place to adapt and mitigate the adverse effects of climate change. This progress continued under the 6th FYP, with special emphasis on air and water pollution control. In addition to the legal framework, the focus on implementation was strengthened with significant progress in managing the air pollution from brick kilns and reducing water pollution from the leather industry. Important steps were also taken to improve biodiversity. However, the overall implementation of existing environmental laws and regulations remains a difficult challenge. Capacity constraints at the lead Ministry of Environment, Forest and Climate Change in terms of human resources as well as financial resources lead to limited implementation progress. Water quality is deteriorating; so is the situation of air quality. Cross country comparison shows that in terms of air quality, Bangladesh is the fourth most polluted country in the world. Similarly, performances in forest coverage and protection of the natural habitats put Bangladesh at the low end of comparator countries. Indicators of overall environmental performance place Bangladesh at the bottom 5% of the 180 countries compared. These suggest that the challenges moving forward are immense.

An important breakthrough on the strategy and policy front happened recently with the adoption of the Bangladesh Delta Plan 2100 in September 2018. This is a comprehensive strategy for managing the risks posed by the deltaic formation of the country along with the incidence of natural disasters and climate change. Speedy implementation of the Delta Plan will be a major input to the reduction of climate-related vulnerabilities and will vastly improve the prospects for sustained development and poverty reduction.

20 "Final Assessment Review of the Sixth FYP", General Economics Division, Planning Commission, Government of Bangladesh, Dhaka, 2018

When it comes to mitigation initiatives, Bangladesh has expressed her intention in the NDC (Nationally Determined Contributions) to take action on mitigation in order to reduce GHGs emissions by following a low carbon development pathway. The country has committed voluntarily to reduce 12 Mt CO2 equivalent in Power, Transport and Industry sectors by 2030 or 5% below business-as-usual (BAU) emission for those sectors. It has also committed an additional 24 Mt CO2 equivalent in those three sectors by 2030 or 10% below BAU emissions if International support is received.

Bangladesh remains a forerunner in its adaptation endeavours. Bangladesh has prepared a NAP Roadmap towards formulating a comprehensive National Adaptation Plan (NAP) with a view to reducing vulnerability to the impacts of climate change by building adaptive capacity and resilience. Building on NAPA (National Adaptation Programme of Action) and BCCSAP (Bangladesh Climate Change Strategy and Action Plan), the NAP will also facilitate the integration of climate change adaptation, into relevant new and existing policies, programmes and activities in a coherent manner, in particular, development planning processes and strategies, within all relevant sectors and at different levels, as appropriate. Bangladesh is also under the process of updating the BCCSAP.

Bangladesh has a much better track record in disaster management and the progress continued during the 7FYP periods. The progress with disaster readiness and disaster response continued to improve as reflected in well-functioning early warning systems and sharp reductions in loss of life and injuries from natural disasters. This progress was defined by the government's implementation of the National Disaster Management Plan 2010-15, the enactment of the National Disaster Act in 2012 and the establishment of the new Ministry of Disaster Management and Relief in 2012. These important strategic and institutional reforms brought in a major strategic change in disaster management away from the emphasis on relief distribution to disaster readiness. Nevertheless, the continued substantial loss of crops, housing, assets and livelihoods, especially from flooding and riverbank erosion, suggests that in addition to continued progress with strengthening disaster preparedness increasingly the government's attention has to shift to better management of the environmental and climate change risks by taking long term investments in water management.

12.3 PP2041 Vision for Environmental Management and a Climate Resilient Delta Nation

Given the high cost of environmental degradation and climate change, the conversion of Bangladesh into a climate-resilient and environmentally sound country is essential. Consistent with good practice global experience, the environment and climate change factors will be integrated into the underlying growth and poverty reduction strategies to build resilience and facilitate the journey to an upper-middle-income country status by FY2031 and to a high-income economy by FY2041. The natural environment in Bangladesh in 2041 will resemble that found in high-income economies. Specifically, the PP2041 Vision for the environmental sector is to:

- Some 80 percent of the population lives in urban areas and enjoys a quality of life that is comparable to those found in the present-day high-income economies.
- There is a proper balance between ecology, the natural environment and needs of the population. In particular, the productivity of land is preserved, forest resources are conserved and enriched, bio-diversity is improved and water resources are properly managed to prevent flooding and water shortages.

- Cities are normally flood free with proper drainage, modern sewerage, proper waste management and clean air.
- There is minimal incidence of absolute poverty, there are no slums and every household has a basic minimum housing quality.
- The country is equipped to respond fully and quickly to any incidence of natural disasters.
- Environmental governance is such whereby there is a sound mix of incentives and regulatory policies including the application of the polluter pays principle and a decentralized implementation of environmental policies and programmes.

12.4 Core Objectives and Targets

To translate this Vision into indicators of progress which can be monitored, the targets for environmental management are shown in Table 12.1. The objectives and targets are consistent with the natural environment found in high-income countries.

Table 12.1: Core Objectives and Targets for Environmental Management

Objectives/Targets	2018 Base Year Values	FY2041 Values
Share of urban population in total population (%)	30	80
Urban households with tap water connectivity (%)	40	100
Urban households with water-sealed sanitary toilets (%)	42	100
Urban households with modern sewerage connection (%)	N/A	100
Rural households with tap water connectivity (%)	0	50
Rural households with water-sealed sanitary toilets (%)	0	50
Rural households with safe sewerage connection	0	100
Incidence of poverty (%)	24	<3
Percent of population living in slums (%) Percent of household living in slums (UN definition)	55	0
Percent of urban centres with waste water treatment facilities	N/A	100
Core environmental spending (% of GDP)	1	3.5
Spending by environment coordinating entity (% of GDP)	0.005	0.5
Application of polluter pays principle (% of cases)	0	100
Carbon tax (% of fuel prices)	0	15
Green area for Dhaka-major cities (square meter per capita)	N/A	5-12
Disaster readiness (%)	N/A	100
Urban water bodies compliance with water quality standards (%)	0	100
Air quality (annual average, µg/m3 PM 2.5)	86	10
Percent of cities flood free with proper drainage	0	100
Percent of land degraded	18	5
Area under forest cover (% of land)	15	20
Protection of Habitat and Biodiversity International Ranking	Bottom 5%	Top 30%
Environmental Performance Index International Ranking	Bottom 5%	Top 30%

Source: GED Projections. Base year values show most recent available data

The targets of Table 12.1 show the large magnitude of the environmental management challenges moving forward. This is partly the result of past backlog. Yet, the ability to address the environmental challenge will also determine the ability to achieve high-income target and mostly eliminate the incidence of absolute poverty by FY2041. The environmental management agenda and the high-income agenda will need to go hand-in-hand.

12.5 PP2041 Strategy for Environmental Management and Climate Resilience

Fundamentally, the main focus of the PP2041 environmental management strategy would be to integrate environment and climate change considerations in the growth strategy. So, essentially, under PP2041 Bangladesh will adopt a green growth strategy. The specific strategies, policies and institutional reforms include:

12.5.1 Integrate Environmental Costs into the Macroeconomic Framework

At the macroeconomic level, the growth strategy would recognize environmental protection as an integral part of the macroeconomic framework. The costs of environmental degradation would be explicitly included in the Base Scenario of the PP2041 Macroeconomic Framework and offsetting measures incorporated in the Policy Scenario.

12.5.2 Implement the Delta Plan to Build Resilience and Reduce Vulnerability to Climate Change

One of the highest priorities is to reduce the vulnerability of the population to natural hazards and climate change by implementing the Delta plan 2100 (BDP2100). The BDP2100 includes major policies, investment programmes and institutional reforms that if adopted and implemented properly will address the sources of long-term climate change vulnerability at source thereby building resilience and reducing the adverse effects of climate change on the population.

Some of the important investment programmes include: sharply improved polder management; a range of flood control programmes including in the haor areas; Ganges Barrage Project; Brahmaputra Barrage Project, the Gorai River Restoration Project; River Dredging and River Training projects; and projects to restore the ecological balance of major lakes (major haor, baor and jheels). These critical projects will fundamentally alter some of the major sources of vulnerabilities including better flood control in the plains and the haor areas; better availability of river and rain-based fresh surface water; better control of riverbank erosion and river flooding; better control of seawater intrusion and salinity reduction; prevention of damage to Sunderbans owing to seawater intrusion; and protecting the natural habitats of birds, flora and fauna through better protection of the lakes.

Important policy reforms consist of increasing public spending on water resources from 0.8% of GDP now to 2% of GDP by FY2020; increasing O&M spending from a negligible amount now to at least 0.5% of GDP by FY2020; provide incentives to encourage public-private partnerships (PPP) in water supply, water transport, river dredging and sanitation; strengthen dialogue with India on better and more equitable sharing of upstream water including joint projects that yield multiple benefits so that water sharing is not a zero-sum game.

Major institutional reforms include: establishment of the Delta Act, the Delta Wing and the Delta Fund that will provide the institutional framework for holistic planning, budgeting, project selection, research and monitoring and evaluation of water and water-related projects; and the establishment of the water user associations (WUA) at the local level that will have primary responsibility for implementing all local-level water projects including O&M. The government will introduce beneficiary-pays-principle for all local water projects and O&M so that over time the water resource and related hazard management become largely beneficiary managed and financed and therefore fully sustainable.

12.5.3 Reduce Air and Water Pollution

Bangladesh will adopt two major principles in the conduct of fiscal policy for better environmental management: (1) beneficiary pays principle; and (2) polluter pays principle. Clean air and clean water are increasingly becoming scarce environmental services in Bangladesh partly because of limited supply but also because of continued degradation by users. Adoption of the polluter pays principle in addition to regulations is absolutely essential to reduce air and water pollution. Specific policies that will be taken include:

Removal of fuel subsidies: Fossil fuel subsidy reform will support climate change policies and goals. It can be recognized as part of a package of measures to implement 'Intended Nationally Determined Contributions' (INDCs) because subsidy reform will both reduce emissions and free up resources to invest in sustainable energy systems.

Adoption of green tax on fossil fuel consumption: The green tax (carbon tax) on fossil fuel can be a tremendously useful policy for integrating environmental considerations in the growth strategy because it not only discourages the consumption of CO2 emitting fossil fuel but also provides a very attractive resource of revenue generation that can be used for investing in clean energy and other environmental programs. A green tax on fossil fuel is also a very good example of the application of the polluter pays principle. Bangladesh will start implementing a carbon tax from FY2020.

Taxation of emission from industrial units: Bangladesh has introduced policies for the control of air pollution from brick manufacturing kilns. Policies are also needed to control emission from other polluting industries. Bangladesh has set air quality standards but monitoring by industrial units is difficult because of the absence of proper testing equipment and database. Once data and monitoring equipment are in place, a system of air pollution taxes would be levied to create incentives for industrialists to adopt clean technology.

Prevention of surface water pollution: Arguably, water pollution owing to inappropriate human and industrial waste disposal is amongst the most pressing environmental challenge in Bangladesh. In addition to laws and regulations that set preventive measures, the polluter pays principle will be applied to create a strong disincentive against illegal disposal of industrial, commercial and household wastes in surface water bodies. At the same time, urgent actions will be taken to launch surface water clean-up drive including arrangements to treat drainage/sewerage water before it reaches public water bodies. This effort would continue until the target for 100% compliance is reached. Community education and participation will be ensured through national campaigns using print and video media and in partnership with NGOs.

Groundwater Sustainability: During the implementation of this plan, the pertinent issue of groundwater sustainability will be addressed with the definite objectives of groundwater protection from depletion, contamination, protection of groundwater dependent ecosystems, optimum use of groundwater and its governance.

Waste Management: With the growth rate of urban population, an increasing rate of waste generation has been a challenge for Bangladesh. There have been insufficient incentives to improve the standard

of waste management across all relevant sectors, especially for industrial waste and medical waste. There are, of course, some recent developments, especially in urban cities. For example, Dhaka City Corporation has a master plan underway to better handle solid waste management. Bangladesh has prepared a National 3R Strategy for Waste Management in 2009. Four compost plants were constructed under the CDM project for waste management in Narayangong, Mymensing and Rangpur City Corporation and Cox's Bazar Municipality. During the implementation of PP2041, the country intends to add more initiatives with the current ones with more impetus.

12.5.4 Ensure Sustainable Management of Forestry Resources

The adoption of the Delta Plan will have major positive implications for sustainable forestry management. A particularly important step is the restoration of the Gorai River that will restore the supply of freshwater to the Sundarbans and clean out the intrusion of saline water. Another important step will be to manage oil spillovers from shipping and dumping of shipping scraps in the Bay of Bengal area. To protect the Sundarbans from oil spill pollution as well as noise pollution and to reduce the risk of wildlife poaching Special Monitoring and Reporting Tools (SMART) will be continued all over the Sundarbans. Ecological corridors will be established to maintain adequate space for viable populations of wild species in all protected areas by implementing a stepwise approach through corridor modelling. Habitat fragmentation and encroachment will be reduced by decreasing human occupations inside the protected areas through resettlement. Focus on this issue is crucial for future sustainability and a resettlement action plan elaborating all required conditions and measures will be prepared.

On the policy front, however, the biggest challenge is to expand the forest area due to high demographic pressure. Ensuring alternative livelihood for the poor people living adjacent to the forest areas, especially the Sundarbans Mangrove Forest, Sal Forest Area and the Chittagong Hill Tracts calls for special attention. It is also a major challenge for conservation and management of the forest resources by the existing human resource capacity of the Forest Department due to lack of manpower. Forest Department will be strengthened by recruiting sufficient manpower to protect forest land and forest resources. To protect forest land and forest resources, the penalty provision of existing laws may be amended to enhance their rigour and enforced strictly so that forest offenders get scared to commit any offence. The forest-dependent local people will be involved directly at large scale in forest management through co-management. The government forest land of Chittagong Hill Tracts will be taken under tree cover through different types of plantation activities with suitable plantation module. Newly accreted char lands and all kinds of marginal land will be brought under plantation program. Wood-based industries would be equipped with modern technology to reduce wastages and encourage wastage recycling. Along with strategies to promote alternative livelihood opportunities for the forest-dependent poor in partnership with community-based groups and NGOs, the capacity of the Forest Department will be sharply strengthened to regularly update the forestry database and implement all forest and wildlife preservation acts, rules, and guidelines. Consideration will be given to imposing a logging tax administered at the factory gate. Banning on harvesting on forest produce from the natural forest will be continued. Strict penalties will be imposed on illegal tree felling and all forest-related illegal activities.

The Bangladesh National REDD+ Strategy (2016-2031) depicts the firm commitment of the Government towards the achievement of the objectives of the international convention of climate change. This strategy enumerates how to reduce forest loss and where to conserve and to increase forest cover. The Bangladesh National REDD+ Strategy (2016-2031), a detailed forest sectoral strategy, is laying out policies and measures to reduce emission from deforestation and forest degradation and to increase forest carbon stock in the country. This strategy will be implemented precisely.

12.5.5 Strengthen Environmental Coordination and Environmental Institutions

Given the high importance of the environmental management agenda, the government would establish a National Environment Management Council (NEMC) chaired by the Prime Minister and comprising of ministries of finance, planning, environment and forestry, land, agriculture, water, fisheries and livestock, law, energy and power, industry and transport. The main function would be to ensure the proper integration of environmental concerns in the development agenda and monitor implementation progress. The Department of Environment of the MoEFCC will provide the secretariat service to (NEMC).

Strengthening MoEFCC: In order for MoEFCC to play its role as the central body for environmental management, its capabilities would be sharply strengthened. Progressive increases in its budget would be provided to reach the target of 0.5% of GDP by FY2041 in order to build up capacity through better staffing, including technical professional staff, establishing a strong digital management information system based on a data bank that will be regularly updated, and regular monitoring and evaluation of environmental compliance. The MoEFCC will build strong partnerships with the private sector, the NGOs and the research community in the areas of compliance monitoring and knowledge management, including data gathering and policy research. Regular dialogue with stake-holders including public hearing and participatory policy development will be done to improve policy implementation and compliance. The MoEFCC will prepare the Environmental Outlook Report on Bangladesh on a two-year cycle with updated information on the state of environment and progress with the action plans for achieving milestones. This will be widely disseminated to different stakeholders, including posting on the MoEFCC website. A Climate Data Bank will be established and put on the website for open access as an important tool for helping government entities and the private sector with environmental compliance, while also supporting related research.

Decentralization of environmental management: Bangladesh will learn from the good- practice international examples of what might be the appropriate division of responsibilities between national and local level environmental agencies. To ensure seamless implementation and avoid conflicting signals, a formal coordinating mechanism between national and local government environmental agencies will be established. The LGIs will be participatory in their approach and adopt proper mechanisms for allowing citizen's participation in all local issues including environmental management. A policy will be adopted to formally engage local government authorities down the Upazila level to involve in the oversight of environmental management linking to development activities.

Strengthening environmental concerns in planning and budgeting: Integration of environmental concerns in budgetary management requires progress on green public financial management (PFM) in terms of green accounting, procurement and auditing. Project selection must also require a full accounting of environmental degradation issues for all investment projects. A start has already been made in the Ministry of Finance on a pilot basis. This will be streamlined and strengthened. PP2041 recognizes that the full incorporation of the green PFM agenda is a long-term endeavour and will require long-term commitment, resources and efforts. Institutional capacities in Ministries of Finance, Planning and concerned line ministries will be substantially strengthened.

12.5.6 Strengthen Climate Change Trust Fund

The Bangladesh Government established the Climate Change Trust Fund (CCTF) from its own budget to implement the BCCSAP, 2009. To manage the CCTF, the Bangladesh Climates Change Trust Act came into force in 2010. From the fiscal year 2009-10 to 2018-2019, a total of 450 million USD has been allocated to this Fund. A total of 625 projects with an estimated cost of 404 million USD have so far been undertaken, of which some 282 of such projects have already been completed. This has been a very useful instrument to pilot many climate change adaptation programmes, while some notable mitigation activities have also been undertaken. PP2041 intends to build on the success of the CCTF and further strengthen the Fund as an instrument to pilot innovative adaptation and mitigation programmes. Lessons of experience will also be used to help design and implement national-level programmes as appropriate.

12.5.7 Develop a Sound Environment and Climate Change Financing Strategy

Investments requirements to ensure the full integration of environmental protection with the growth strategy are estimated at around 4.5% of GDP as compared with only 1% presently. Although the environment typically is a public good, the public sector alone cannot finance it. Innovative solutions must be found to ensure a good division of financing options between public and private sectors. PP2041 will focus on various financing options noted below.

Private financing options: There are three main instruments for boosting private financing for the environment. First, in a number of areas, such forestry for timber, fisheries, eco-tourism, water supply and waste management, private supply can be encouraged with proper regulatory and pricing policies. Second legal and regulatory policies can be used to encourage proper adoption of measures that include private investment in the protection of the environment. Important examples include the adoption of clean air technology in industries, installation of ETPs in industries and private hospitals, and prevention of land degradation through proper farming practices. Third, the public sector can enter into co-financing arrangements of a range of environmental services through public-private partnerships including partnerships with communities. For example, programs for clean rural water supply and sanitation, cleanup of rural ponds used for bathing and household cleaning, public toilet and public bathing facilities can all be implemented through public subsidy to private suppliers as well as through cost-sharing arrangements with the community. The PP2041 will actively pursue all these options.

Public financing policies: As noted earlier, presently the budget provides about 1% of GDP for water resource and environmental management. Some 2% of GDP of additional financing will need

to come from tax resource mobilization. Bangladesh has one of the lowest tax to GDP ratio in the world and the Macroeconomic Framework of PP2041 allows for an additional tax/GDP ratio increase of 5% that can accommodate this additional financing. The remaining 0.5% of GDP domestic financing can be mobilized through the application of the beneficiary pays principle (cost recovery) and the polluter pays principle (green taxes). The consumption of fossil fuels like high sulfur coal, furnace oil, petroleum and gas would be discouraged through the introduction of a carbon tax as a means of reducing GHG that contribute to global warming and climate change. Prospects for cost recovery from the supply of water, sanitation and solid waste management are large. Presently, there is minimal cost recovery from water and sewerage services provided by WASAs and Municipalities. Cost recovery is based on partial recovery of operation cost only. This pricing policy would be changed, both to mobilize funding for new investments as well as to ensure efficient use of water. The water and sewerage pricing policy must move to full operating cost recovery by FY2020 and 100% capital cost recovery by FY2031.

Regarding green taxes, the combination of fossil fuel tax and pollution tax on industries polluting air and water, and households polluting water would generate adequate revenues to finance environmental protection and mass transit programmes such as BRT, LRT and Metro Rail, for the urban areas. A carbon tax will also encourage the adoption of green technology and private investment in renewable energy.

Tapping the Green Climate Fund (GCF): The GCF was established in 2009 to mobilize climate finance to support scaled-up mitigation and adaptation actions in developing countries. An amount of $10.2 billion of climate finance was initially pledged to the GCF; as of January 2016, some $5.9 billion was confirmed. The Paris Agreement of 2014 defines the framework for the functioning of the GCF. From the perspective of eligibility, Bangladesh is ideally placed to harness resources from the GCF. The main challenge is to gear up capacity to mobilize these resources by following the guidelines of the GCF.

To access to the GCF the recipient countries have to ready themselves by meeting certain criteria and standards. Necessarily countries have to appoint a National Designated Authority (NDA) to operate the Fund and criteria based National Implementation Entity (NIE)/Multilateral Implementation Entity (MIE) to access to the Fund. Bangladesh has nominated its Economic Relations Division (ERD) of the Ministry of Finance as NDA. Regarding NIE, so far, only two national entities, IDCOL and PKSF, have been accredited as NIE to partner with GCF. Bangladesh would take all possible steps to accelerate the accreditation of more NIEs to enable faster access to GCF funds.

Mobilizing resources from other global funds: Efforts would also be made to mobilize resources for climate funding from other global programs such as Adaptation Fund, Least Developed Countries Fund (LDCF), Climate Investment Fund (CIF), Forest Investment Program (FIP), Global Environmental Facility (GEF), Reducing Emissions from Deforestation and Forest Degradation (REDD), Nationally Appropriate Mitigation Action (NAMA) etc. The government may set up a dedicated wing in the Economic Relations Division (ERD) to effectively coordinate and access funding from these other international climate funds as well.

12.6 Unlocking the Potential of the Blue Economy

Bangladesh's open access to the sea is a great asset that not only facilitates international trade and commerce but provides access to a wide variety of marine resources. With the settlement of maritime border disputes with neighbouring states Myanmar, the territorial waters are now considered as a new 'development space' in Bangladesh. The PP2041 will seek to unlock the true potential of the Blue Economy in a sustainable manner through appropriate policies and investments.

At the end of the final settlement of maritime border disputes with neighbouring states Myanmar and India in 2012 and 2014 respectively, Bangladesh has received entitlement on 118,813 km2 in the Bay of Bengal comprising her territorial sea, Exclusive Economic Zone (EEZ) and Continental shelf. The shallow shelf sea and continental shelf constitute about 20% and 35% respectively, the rest (45%) lying in deeper waters.

The blue economy comprises activities that directly or indirectly takes place in the seas, oceans and coasts using oceanic resources and eventually contributing to sustainable and inclusive economic growth, employment, and well-being while preserving the health of the ocean. It includes activities such as exploration and development of marine resources, appropriate use of ocean and coastal space, use of ocean products, provision of goods and services to support ocean activities and protection of ocean environment. The transition to Blue Economy would entail fundamental and systemic changes in their policy-regulatory-management-governance framework(s) and identification of various maritime economic functions.

12.7 Recent Progress with the Blue Economy

The Government started the development of the blue economy under the 7th FYP. The port sector is being developed and improved with the construction of a new port in Patuakhali (Pyra Port) that is expected to be fully operational by the end of 2020. Additional developments in the marine fisheries sector, particularly with respect to conservation and sustainable exploitation, have been undertaken. A proportion of the bottom trawls have already been converted to mid-water trawls to lessen pressure on the demersal fish stocks, reduce the destruction of sea-bottom habitats, and to exploit the mid-water fish stocks. Temporary ban on fishing in a certain period of the year is being imposed for several years now to allow breeding and replenishmentof important fishes, specifically Hilsa. In order to carry out regular fish stock assessments, the Department of Fisheries has procured a survey vessel.

In 2014, the Government of Bangladesh declared the country's first Marine Protected Area, Swatch of No Ground, to safeguard whales, dolphins, sea turtles, sharks, and other oceanic species under the Wildlife (Conservation and Security) Act, 2012. Spanning some 672 square miles (1,738 km2) in size with a depth of 900+ meters, the Swatch of No Ground Marine Protected Area includes deep waters at the head of the submarine canyon as well as coastal waters offshore from the world's largest mangrove forest in the Sundarbans. Destructive fishing methods and gears, e.g., set bag net, have been completely banned from the operation. Vessel Tracking and Monitoring System (VTMS) with satellite communication links are going to be installed soon in fishing vessels in phases, in order to monitor and control their manoeuvre at sea for various management purposes.

In the environment sector, several Ecologically Critical Areas (ECA) have been enforced in various coastal ecosystems to maintain critical habitats, biodiversity, marine turtle breeding and conservation, and mangrove restoration and growth. Mangrove afforestation in newly accreted intertidal areas is going on for decades now.

Recently the National Oceanographic Research Institute (NORI) has been founded for coastal and oceanic research. Also, a Chief Hydrographer's Officer position has been established at the Armed Forces Division of the Prime Minister's Office to coordinate and lead hydrographic surveys and other related research activities in the Bay of Bengal.

International partnerships are also being built to strengthen knowledge and strategy for the blue economy. An MOU was signed with India in June 2017 to work closely on the development of ocean-based Blue Economy and Maritime Cooperation in the Bay of Bengal and chart out the ways for future cooperation. Discussions are also underway with China and the EU for cooperation relating to the development of the Blue Economy.

To strengthen institutional coordination, the Government, through a gazette notification dated 22 October 2014, constituted a 25-member 'Coordination Committee to tap marine resources and its proper management'. Principal Secretary, Prime Minister's Office is the coordinator of the Committee. Recently, Energy & Mineral Resources Division of the Ministry of Power, Energy & Mineral Resources has been entrusted with the coordination. A 'Blue Economy Cell' has been established within the Energy & Mineral Resources Division.

Moving forward, there are several constraints that will need to be addressed to unlock the potential of the blue economy. These include: lack of investments; inadequate private sector role, lack of knowledge and assessment of ocean resources, absence on ocean and coastal development policy framework, and lack of human resources. These constraints will be addressed in the PP2041 Strategy for the blue economy.

12.8 PP2041 Strategy for the Blue Economy

The main elements of the strategy include:

- Develop a sound policy framework for harnessing the potential of the blue economy. A task force comprising of government officials and local and international experts will be constituted to do this.
- Much of the investment for the development of the blue economy will come from the private sector. Based on the recommendations of the policy framework, appropriate incentive and regulatory policies for promoting private investment in the blue economy will be adopted. The role of FDI will be promoted to bring new knowledge, technology and financing. Efforts will be made to ensure full access of marine resources to small-scale artisanal fishers. Establishing a Monitoring, Surveillance and Control regime for huge fleets of artisanal fishing boats would be a top priority. Institutional coordination between the Department of Fisheries and the Marine Mercantile Department will be ensured to facilitate a low-cost and hassle-free registration and licensing process. Efforts will be made

to motivate, facilitate and promote small-scale artisanal fishing cooperatives in deep-sea fishing.

- To address the lack of knowledge and assessment of ocean resource constraint, a two-pronged strategy will be adopted. On the domestic front, emphasis will be given to developing in-house capability to do ocean surveys with technical support from the navy and the engineering universities. On the international front, technical assistance will be sought from concerned countries that have this expertise.
- Both knowledge and resource mobilization will benefit from regional and international cooperation arrangements. PP2041 will build on the ongoing initiatives with India, China and the EU to fast-track the research and joint investments relating to the blue economy.
- Top priority will be given to ensure sustainable use of marine resources. Some high-priority time-bound activities include: by 2020, start the restoration process for degraded marine and coastal ecosystems in appropriate cases, i.e. Chakaria Sundarban and establish sustainable management; by 2020, achieve science-based management plan for sustainable marine fisheries through assessment of marine fish stock and determining Maximum Sustainable Yield (MSY) by intensive field investigation; and by 2025, Bangladesh achieve institutional capacity and establish infrastructure capable of surveying, monitoring and removal of marine debris, reducing micro-plastic pollution by consumer products and other industrial waste, vessel-based pollution like ballast water and invasive aquatic species.
- The Blue Economy requires a variety of skills including skilled coastal and offshore engineers, navigators, merchant mariners, fisheries technologists, biotechnologists, and marine resource surveyors. Bangladesh has enormous potential for seafaring job opportunities from its 18 private and public marine academies, provided it can arrange on board practical training facilities. Recently the Bangladesh Oceanographic Research Institute (BORI) has been established for coastal and oceanic research. Further efforts will focus on navigators, fisheries technologists, biotechnologists and marine resource surveyors in consultation with leading national teaching institutions.
- Emphasis will be placed on tapping the potential from sea-weeds that plays a major *role in marine ecosystems and has multipurpose uses* such as human food, medicine, manure & fertilizer and industrial materials. It also has good export potential. A number of initiatives have already been taken by the Ministry of Agriculture for the development of production and processing of seaweeds. Further initiatives will be taken for promoting seaweed culture on a commercial scale.
- PP2041 will place a strong emphasis on maintaining biodiversity to ensure long term fish availability. Several steps will be taken including: establish marine protected areas (MPAs) – one declared around 'Swatch of No Ground'; enforce a ban on fishing during the breeding season; participate in international fisheries management agreements; promote efficient waste minimization measures and techniques, and strengthen research and study.

- Coastal tourism will be promoted through a number of actions including: launch of domestic and international tourism campaign at frequent intervals; establish joint coastal tourism programme with neighbours; develop all-season tourism boat fleet; promote dolphin and sea whale watching tour packages; popularise tourism as incentives/prizes for performance achievers in corporate and government offices; promote ecotourism as part of the tourism; provide investment and tax incentives to tour promoters/operators and facilitators; and develop professional tour guides.
- Finally, steps will be taken to tap the potentials of the Blue Economy as a source of energy through off-shore drilling and exploration.

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5. Sustainable power and energy strategy for meeting the demands of a high growing economy
6. Evolving Pattern of global trade in goods and services and world market integration
7. Strategies for a paradigm shift in agriculture, aquaculture, animal husbandry and forestry for food security and nutrition
8. Education, skills and human development for Vision 2041
9. Science, technology, ICT and information highway for a rapidly transformational economy
10. Health and population management for sustained human development
11. Empowerment of children, women and youth to strengthen social inclusion and support shared prosperity
12. Developing transportation and quality infrastructure to support sustained rapid growth (roads and highways, ports, railways, aviation and water transport)
13. Addressing climate change, green growth environment and water resources for sustaining shared prosperity
14. Addressing climate change, green growth environment and water resources for sustaining shared prosperity
15. Service sector development to support high growth in a transforming economy
16. Eradicating poverty and minimizing income inequality for ensuring shared prosperity

Notable List of GED Publications

1.	Policy Study on Financing Growth and Poverty Reduction: Policy Challenges and Options in Bangladesh (May 2009)
2.	Policy Study on Responding to the Millennium Development Challenge Through Private Sectors Involvement in Bangladesh (May 2009)
3.	Policy Study on The Probable Impacts of Climate Change on Poverty and Economic Growth and the Options of Coping with Adverse Effect of Climate Change in Bangladesh (May 2009)
4.	Steps Towards Change: National Strategy for Accelerated Poverty Reduction II (Revised) FY 2009 -11 (December 2009)
5.	Millennium Development Goals: Bangladesh Progress Report-2009 (2009)
6.	Millennium Development Goals: Needs Assessment and Costing 2009-2015 Bangladesh (July 2009)
7.	এমডিজি কর্ম-পরিকল্পনা (৫১টি উপজেলা) (জানুয়ারি-জুন ২০১০)
8.	MDG Action Plan (51 Upazillas) (January 2011)
9.	MDG Financing Strategy for Bangladesh (April 2011)
10.	SAARC Development Goals: Bangladesh Progress Report-2011 (August 2011)
11.	Background Papers of the Sixth Five Year Plan (Volume 1-4) (September 2011)
12.	6th Five Year Plan (FY 2011-FY 2015) (December 2011)
13.	Millennium Development Goals: Bangladesh Progress Report-2011 (February 2012)
14.	Perspective Plan of Bangladesh 2010-2021: Making Vision 2021 a Reality (April 2012)
15.	Public Expenditure for Climate Change: Bangladesh Climate Public Expenditure and Institutional Review (October 2012)
16.	Development of Results Framework for Private Sectors Development in Bangladesh (2012)
17.	ষষ্ঠ পঞ্চবার্ষিক পরিকল্পনা (২০১১-১৫) বাংলা অনুবাদ (অক্টোবর ২০১২)
18.	Climate Fiscal Framework (October 2012)
19.	Public Expenditure for Climate Change: Bangladesh CPEIR 2012
20.	First Implementation Review of the Sixth Five year Plan -2012 (January 2013)
21.	বাংলাদেশের প্রথম প্রেক্ষিত পরিকল্পনা ২০১০-২০২১ রূপকল্প ২০২১ বাস্তবে রূপায়ণ (ফেব্রুয়ারি ২০১৩)
22.	National Sustainable Development Strategy (2010-2021) (May 2013)
23.	জাতীয় টেকসই উন্নয়ন কৌশলপত্র (২০১০-২০২১) [মূল ইংরেজি থেকে বাংলায় অনুদিত] (মে ২০১৩)
24.	Millennium Development Goals: Bangladesh Progress Report-2012 (June 2013)
25	Post 2015 Development Agenda: Bangladesh Proposal to UN (June 2013)
26.	National Policy Dialogue on Population Dynamics, Demographic Dividend, Ageing Population & Capacity Building of GED [UNFPA Supported GED Project Output1] (December 2013)
27.	Capacity Building Strategy for Climate Mainstreaming: A Strategy for Public Sector Planning Professionals (2013)
28.	Revealing Changes: An Impact Assessment of Training on Poverty-Environment Climate-Disaster Nexus (January 2014)
29.	Towards Resilient Development: Scope for Mainstreaming Poverty, Environment, Climate Change and Disaster in Development Projects (January 2014)
30.	An Indicator Framework for Inclusive and Resilient Development (January 2014)
27.	Capacity Building Strategy for Climate Mainstreaming: A Strategy for Public Sector Planning Professionals (2013)

28.	Revealing Changes: An Impact Assessment of Training on Poverty-Environment Climate-Disaster Nexus (January 2014)
29.	Towards Resilient Development: Scope for Mainstreaming Poverty, Environment, Climate Change and Disaster in Development Projects (January 2014)
30.	An Indicator Framework for Inclusive and Resilient Development (January 2014)
31.	Manual of Instructions for Preparation of Development Project Proposal/Performa Part-1 & Part 2 (March 2014)
32.	SAARC Development Goals: Bangladesh Progress Report-2013 (June 2014)
33.	The Mid Term-Implementation Review of the Sixth Five Year Plan 2014 (July 2014)
34.	Millennium Development Goals: Bangladesh Progress Report 2013 (August 2014)
35.	Population Management Issues: Monograph-2 (March 2015)
36.	GED Policy Papers and Manuals (Volume 1-4) (June 2015)
37.	National Social Security Strategy (NSSS) of Bangladesh (July 2015)
38.	MDGs to Sustainable Development Transforming our World: SDG Agenda for Global Action (2015-2030)- A Brief for Bangladesh Delegation UNGA 70th Session, 2015 (September 2015)
39.	7th Five Year Plan (2015/16-2019/20) (December 2015)
40.	সপ্তম পঞ্চবার্ষিক পরিকল্পনা ২০১৫/১৬-২০১৯/২০ (ইংরেজি থেকে বাংলা অনূদিত) (অক্টোবর ২০১৬)
41.	জাতীয় সামাজিক নিরাপত্তা কৌশলপত্র (অক্টোবর ২০১৬)
42.	Population Management Issues: Monograph-3 (March 2016)
43.	Bangladesh ICPD 1994-2014 Country Report (March 2016)
44.	Policy Coherence: Mainstreaming SDGs into National Plan and Implementation (Prepared for Bangladesh Delegation to 71st UNGA session, 2016) (September 2016)
45.	Millennium Development Goals: End- period Stocktaking and Final Evaluation Report (2000-2015) (September 2016)
46.	A Handbook on Mapping of Ministries by Targets in the implementation of SDGs aligning with 7th Five Year Plan (2016-20) (September 2016)
47.	Data Gap Analysis for Sustainable Development Goals (SDGs): Bangladesh Perspective (January 2017)
48.	Environment and Climate Change Policy Gap Analysis in Haor Areas (February 2017)
49.	Integration of Sustainable Development Goals into the 7th Five Year Plan (February 2017)
50.	Banking ATLAS (February 2017)
51.	টেকসই উন্নয়ন অভীষ্ট, লক্ষ্যমাত্রা ও সূচকসমূহ (মূল ইংরেজি থেকে বাংলায় অনুদিত) (এপ্রিল ২০১৭)
52.	EXPLORING THE EVIDENCE : Background Research Papers for Preparing the National Social Security Strategy of Bangladesh (June 2017)
53.	Bangladesh Voluntary National Review (VNR) 2017 : Eradicating poverty and promoting prosperity in a changing world, (June 2017)
54.	SDGs Financing Strategy: Bangladesh Perspective (June 2017)
55.	A Training Handbook on Implementation of the 7th Five Year Plan (June 2017)
56.	7th Five Year Plan (FY 2015/16-FY 2019/20): Background Papers Volume 01: Macro Economic Management & Poverty Issues (June 2017)
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70.	Bangladesh Delta Plan 2100: Baseline Studies: Volume 6: Governance and Institutional Development(June 2018)
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73.	Bangladesh Delta Plan 2100 (Bangladesh in the 21st Century) Volume 1: Strategy (October 2018)
74.	Bangladesh Delta Plan 2100 (Bangladesh in the 21st Century) Volume 2: Investment Plan (October 2018)
75.	বাংলাদেশ ব-দ্বীপ পরিকল্পনা ২১০০: একুশ শতকের বাংলাদেশ (সংক্ষিপ্ত বাংলা সংস্করণ) (অক্টোবর ২০১৮)
76.	Bangladesh Delta Plan 2100: Bangladesh in the 21st Century (Abridged Version) (October 2018)
77.	Synthesis Report on First National Conference on SDGs Implementation (November 2018)
78.	Sustainable Development Goals: Bangladesh First Progress Report 2018 (December 2018)
79.	টেকসই উন্নয়ন অভীষ্টঃ বাংলাদেশ অগ্রগতি প্রতিবেদন ২০১৮ (ইংরেজি থেকে অনূদিত) (এপ্রিল ২০১৯)
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84.	Background Studies for the Second Perspective Plan of Bangladesh (2021-2041) Volume-2 June 2019
85.	Empowering people: ensuring inclusiveness and equality For Bangladesh Delegation to HIGH-LEVEL POLITICAL FORUM 2019 (July, 2019)
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87.	Bangladesh Moving Ahead with SDGs (Prepared for Bangladesh Delegation to 74th UNGA session 2019) (September 2019)
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95	Monograph 5: Population Management Issues (December 2019)
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