8th FIVE YEAR PLAN JULY 2020 – JUNE 2025

Promoting Prosperity and Fostering Inclusiveness

Background Papers

Volume 1

Financial Sector, Investment Climate, ICT and Governance

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

8th Five Year Plan
Background Papers

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

Message

I am happy to know that the General Economics Division (GED) of the Planning Commission is publishing the background papers conducted for the preparation of Eighth Five Year Plan (July 2020-June 2025).

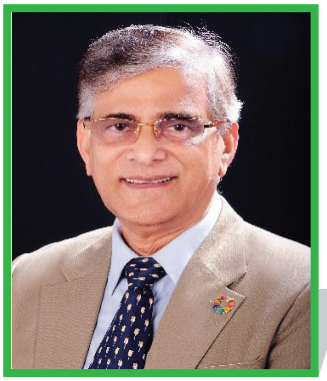
The background papers have been provided with valuable inputs on both quantitative and qualitative data. These studies have made it easier to identify the areas of interventions and proposed some policy recommendations on how to achieve the targets set by the government in the 8th Five Year Plan.

Bangladesh has made commendable progress in MDGs. The success also continues in SDG period which is reflected by the SDG Progress Award received by honorable Prime Minister Sheikh Hasina from Sustainable Development Solution Network. Despite the achievement, we have to go a long way to materialize the dream of Father of Nation to become a happy and prosperous nation. We should not be complacent as we have to carry out the ongoing rapid transformation of the country. I hope these studies will be a useful reference for the policymakers, development partners, academics and researcher alike to further research endeavors and knowledge sharing and I would like to see the continuation of such publications in the future as well.

I am confident that the Eighth Five Year Plan will amply guide us in realising the agenda of our "Vision 2041" of becoming a High-Income Country (HIC) by 2041.

In this instance, I would like to take this opportunity to thank the state minister for Planning and GED officials for this initiative and hard work. My sincere appreciation goes to the experts in their respective fields for completing the Background Studies for the Eighth Five Year Plan preparation.

(M. A. Mannan, MP)



Dr. Shamsul Alam
Minister of State
Ministry of Planning
Government of the People's Republic of Bangladesh

Message

I am glad that General Economics Division (GED) of Bangladesh Planning Commission is going to publish background papers which have been used as the inputs for preparing the country's Eighth Five Year Plan (July 2020-June 2025). These papers are the culmination of macroeconomic and sectoral issues of Bangladesh for future intervention that GED has pursued with various eminent economists, social scientists, researchers, academia etc. at national level.

These background papers were undertaken for generating quantitative/qualitative benchmark values and targets for relevant indicators of the Plan and fill in critical knowledge gaps. Renowned economists and development practitioners in the relevant fields with a long-standing flair were assigned to conduct the studies within the stipulated timeframe.

In the light of Vision 2041, the Eighth Plan looks to improved standard of living of the citizens, population better educated, better social justice and a more equitable socio-economic environment. Special emphasis was given on the investment of health and education as well as skill development of the upcoming and existing labor force. We must act now to protect the cognitive capital of our future generation and I believe we can act more vigorously because recent positive trends in Bangladesh's development give us that confidence. We can act more purposefully because it is evident that research-based policy making and practice can be successful in Bangladesh.

I congratulate the GED for taking up this bold and timely initiative. I would like to thank the authors and also the organizations who have contributed to prepare these background papers. Well Documented background papers will also be helpful for policy planners, development practitioners, researchers, academicians and even students as well. I expect that the background papers will be valuable for the officials of GED to prepare necessary policy briefs and write-ups they often prepare. I believe that not only GED but also other relevant officials will be immensely benefited with these background papers for upgrading and updating their knowledge and professional competences.

Finally, I convey my gratitude towards our Honorable Minister, Ministry of Planning, Mr. M.A. Mannan, MP for his guidance, instructions and continuous support in making this publication a reality.

(Dr. Shamsul Alam)

Dr. Md. Kawser Ahmed
Member (Secretary)
General Economics Division (GED)
Bangladesh Planning Commission

Foreword

It is of immense pleasure that General Economics Division (GED) of Bangladesh Planning Commission is going to publish background papers which have been used as the inputs for preparing the country's Eighth Five Year Plan (July 2020-June 2025).

For developing the Plan strategies and indicating the desirable development path that would lead to fulfilling its objectives, twenty different background studies covering different socio-economic sectors and sub-sectors, and a technical framework for macroeconomic projection for FY21-25 were prepared. Renowned economists and development practitioners in the relevant fields with a long-standing flair were assigned to conduct the studies within the stipulated timeframe.

These background studies are rich in contents and, if made available, will enrich the knowledge base relating to development challenges and development options facing Bangladesh. The background papers are going to publish in five separate volumes which will help the readers to understand the rational for the choice of the specific domain underlying the Plan and the design of the policy package adapted for the Plan for reconciling the goals of efficiency with those of equity.

I would like to express my deep gratitude to the authors and reviewers of the background studies for their sincere efforts in finalising the manuscripts in time. I am also indebted to the relevant officials of GED for their untiring support and cooperation in managing all the studies. I hope that the relevance of the issues and the diverse contents and analyses would make these volumes useful for the research community, policymakers, and others who are interested in understanding the development challenges of Bangladesh. I believe, readers would find all these approach papers of the Eighth Five Year Plan as source of rich treasure of knowledge and insights.

Dr. Md. Kawser Ahmed

Acknowledgements

The preparation of Eighth Five Year Plan (8FYP) was commissioned in 2019. Initially, a 'National Steering Committee' was formed under the chairmanship of the Hon'ble Minister of Planning to oversight the preparation of the plan. A Panel of Economists', under the chairmanship of Dr. Wahiduddin Mahmud, was also formed comprising luminous Bangladeshi economists, sociologists, educationalists and experts on relevant fields, who gave continuous support in shaping the 8FYP. In this important initiative, General Economics Division (GED) ensured partnership of all the ministries/divisions/agencies, policy makers, academia, civil society organizations, NGOs, development partners, think-tanks and thought leaders in formulating this plan. A total of twenty (20) background studies were conducted with the help of the eminent experts in their respective fields. As GED is going to publish the background studies in 05 volumes, it would like to exert its gratitude to all the stakeholders involved.

First and foremost, GED would like to express its humble gratitude to the Hon'ble Prime Minister and the Chairman of the National Economic Council (NEC) H.E. Sheikh Hasina for her strategic direction and well-judged suggestions for finalizing the 8FYP.

GED is thankful for the guidance and timely direction provided by the Hon'ble Minister, Ministry of Planning Mr. M.A. Mannan, MP. His visionary leadership expedited the process of finalizing the 8FYP.

We are indebted to the outstanding leadership of Dr. Shamsul Alam, Hon'ble Minister of State, Ministry of Planning. He led the review and editorial process of the background papers and guided us to formulate the 8FYP.

Our heartfelt thanks to Mr. Md. Mafidul Islam, Chief, GED for his coordination and guidance in conducting the background studies. This would have not been possible without the extensive technical support from Mr. Md. Mahbubul Hoque Patwary, Joint Chief; Ms. Munira Begum, Joint Chief; Mr. Md. Mahbubul Alam Siddiquee, Deputy Chief; Mr. Mohammad Fahim Afsan Chowdhury, Senior Assistant Chief; and Mr. Shimul Sen, Senior Assistant Chief.

Finally, we would like to acknowledge with gratitude the continuing support being received from the officials and staff of the 'Preparation and Monitoring of Medium-Term Development Plans (8th Five Year Plan) to Implement SDGs and Vision-2041' project being implemented by GED for consolidating and publishing the aforesaid background studies in volume.

Study 1

Financial Sector Issues, Fiscal and Monetary Policy Strategies for Upper Middle Income Bangladesh- Challenges and the Way Forward

Ahsan H. Mansur*

* Executive Director, Policy Research Institute of Bangladesh

1. Introduction and Background

Bangladesh is firmly on a path to graduate out of the LDC status and become a middle income developing country by 2024. Inclusive economic growth, emphasis on social development, and continued macroeconomic stability have contributed to sustained economic growth, reduction in poverty, and steady improvements in numerous social indicators. As a matter of fact, Bangladesh's social development exceeds its peer LDCs by wide margins.

As Bangladesh positions itself to become a developing country with sustained high level of economic growth, concerns are emerging about the state of the financial sector and fiscal, balance of payment and exchange rate management. Despite progress on most fronts over the last several decades since independence, Bangladesh financial sector is still relatively underdeveloped compared with most peers and it is also suffering from numerous structural problems. All the pillars of the financial sector have fundamentally weakened in recent years contributing to eroded confidence in the financial system. Financial deepening and financial intermediation are deteriorating pointing to a situation where the weak financial system may not be able to support the needs of a fast growing middle-income economy.

Concerns are also emerging about the ability of the government to meet the growing needs for broader and better quality public services in line with the growing expectations of the citizens. Meeting the public expectations will require higher levels of public spending on infrastructures of different kinds, on public education and public health services, and social protection for the poor and vulnerable segments of the society. Implementation of the Delta Plan and realizing the objectives of Sustainable Development Goals (SDG) will go a long way towards realizing the economic and social objectives under the Perspective Plan 2021 and the successor Perspective Plan 2041 (PP 2041). However, the resource requirements associated with the realization of these objectives continue to be a major challenge and if not successfully managed may jeopardize the cherished objectives established under the SDG and the PP 2041. Bangladesh's tax/GDP ratio is not only the lowest among its peers but also declining in recent years. Under the Sixth Five Year Plan the tax/GDP ratio increased by less than one percentage points to 11% of GDP compared with a target of 14.5% of GDP. The tax/GDP ratio further declined to 8.6% in FY19 under the 7th Plan, compared with the target of 14.1% of GDP by FY20 under the Seventh Plan. Under the Eighth Five Year Plan (8th Plan) the target has been set at 14.2% of GDP, which will require major reform efforts at the National Board of Revenue (NBR).

This background paper covers three core areas of macroeconomic management—financial, fiscal and monetary/exchange rate management issues-- under the 8th Plan. Since continued macroeconomic stability will be a pre-requisite for achieving the socio-economic objectives under the 8th Plan, SDG initiative and for PP41, strengthening financial, fiscal and monetary/exchange rate management should get much greater attention under the 8th Plan. Section II of the study provides recent developments in the financial Sector covering its all four pillars. The following section (Section III) discusses the external sector developments and exchange rate management. Developments in the fiscal sector along with revenue and expenditure trends and important issues related to them have been covered in Section IV. Sections II through IV also discuss Bangladesh's relative performance in these sectors vis-a-vis the 6th and 7th Plan targets/objectives. Section V discussed financial and external sector developments and management issues covering all major areas like banking, stock market, insurance and bond market. Section VI discusses macroeconomic, political and

institutional constraints to improving fiscal and monetary/exchange rate policies. Possible policies under the 8th Plan are outlined in Section VII. This section discusses policy or reform issues related to the financial sector including monetary, interest rate and exchange rate management issues along with full set of recommendations for improving revenue performance and expenditure management and quality improvement. Some concluding observations are presented in the final section (Section VIII).

2. Developments in The Financial Sector

2.1 Background and Institutional Context

Bangladesh financial system has made significant progress over the last several decades in terms of asset growth and in terms of range of services provided. Successive rounds of banking sector reforms had put the banking sector in a solid footing as measured in terms of key banking sector indicators. However, banking sector performance started to deteriorate after 2011, as the quality of assets started to deteriorated and the sector was also hit by a series of major banking scams. Conditions of other financial sub-sectors are also not very good. The stock market went through a bull run fueled to a large extent by loose monetary policy, and thereafter collapsed in late 2010 following the bursting of the bubble. It has recovered to some extent supported by a series of reforms initiated with support from ADB, but the market still faces numerous problems including failure to attract good companies for public listing despite 10% corporate tax advantage offered to listed companies. Bond market performance--in terms size of the Treasury bills and bond and issuance of corporate bonds--has deteriorated in recent years. The state of the insurance sector has remained weak due to lack of transparency and very weak regulatory supervision of the sector.

Bangladesh financial system is dominated by the banking sector, which fundamentally depends on short- and medium-term deposits for financing their lending portfolios. This limits availability of funds that would be required for long-term investments like infrastructure and housing. Bangladesh has a capital market, with its known difficulties, and there is no vibrant secondary market for bonds, which limits the availability of resources for infrastructure financing. This section starts with a general overview of the current structure of the financial system in Bangladesh in terms of the 4 key markets—money market comprising banks, microfinance institutions and nonbank financial institutions, stock market, bond market and insurance market--and their sizes, relationships between the various markets and the associated regulatory bodies assigned to govern the different market segments. It then analyzes recent performance of these markets by looking at their important constituents and identifies the key challenges these markets are facing which could undermine their intermediation role in allocating resources to the key sectors and activities to support achievement of the Seventh Plan objectives.

2.2 Structure of The Financial System in Bangladesh

The financial system of Bangladesh is comprised of three broad fragmented sectors, Formal Sector, Semi-Formal Sector and the Informal Sector. The categorization is based on the extent of regulation in the sectors. The formal financial sector is comprised of money market (comprising operations of the banking system, microcredit institutions, nonbank financial institutions, interbank foreign exchange market), the capital market (stock market), bond market and the insurance market. Operational activities of these institutions in the formal financial sector are governed by a number of regulators such as Bangladesh Bank

(banking system), Securities and Exchange Commission of Bangladesh (BSEC, regulating the stock market operations), Insurance Regulatory Authority (for insurance institutions), and Microcredit Regulatory Authority (for micro credit institutions). Ministry of Finance also has some oversight role in certain aspects. The current size of the respective sectors measured in terms of asset base of the financial sector of Bangladesh is shown in Table 1.

Bangladesh's financial sector is dominated by the banking sector. The capital market and bond market make up the second and third most significant segments of the financial system, respectively. Bond market is dominated by treasury bills and saving instruments issued by the National Saving Directorate (NSD) of the Ministry of Finance. The insurance sector is quite old, but its size is still relatively small.

Table 1: Size of Different Segments of the Financial System as Share of Total Assets of the Formal Financial Sector and as Percentage of GDP, December 2017

	Total Asset of Financial Sub-Sectors as of December 2017 (BDT in Billions)	Percentage Share in Total Assets of the Formal Financial Market	Percentage Share of GDP
Banking Sector	16205.5	67.5	82.0
Capital Market	3669.6	15.3	18.6
Bond Market*	3544.5	14.8	17.9
Insurance Market	592.7	2.5	3.0
Total Assets of the Formal Financial Market	24012.3	100.0	121.5

*Outstanding Government Bonds includes NSD Certificates, T-bills and T-bonds

Sources: Financial Stability Report 2017, Monthly Economic Trends October 2018- Bangladesh Bank

The **semi-formal financial sector** includes those institutions which are regulated otherwise but do not fall under the jurisdiction of Central Bank, Insurance Authority, Securities and Exchange Commission or any other enacted financial regulator. This sector is mainly represented by Specialized Financial Institutions like House Building Finance Corporation (HBFC), Palli Karma Sahayak Foundation (PKSF), Samabay (Cooperative) Bank, Grameen Bank, and financial activities/programmes (lending and deposit taking) of various Non-Governmental Microcredit Organizations. The **informal financial sector** includes private intermediaries which are completely unregulated and sometimes engaged in financial transactions not legally permitted.

2.3 Money Market

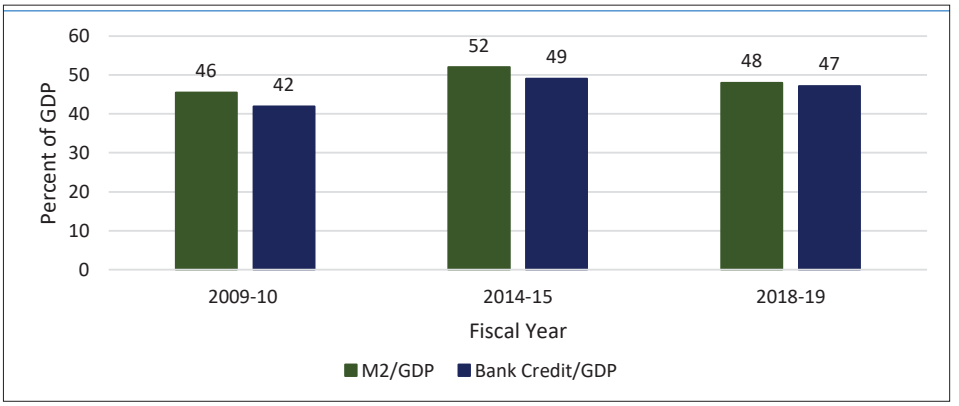
A. Banking Sector--An Overview of Past and Recent Developments

Some Important Indicators of Banking Sector Performance

In terms of its banking sector performance, Bangladesh has done well overall despite some setbacks in the area of public banking. Banking reforms which started in early 1980s, but gathered momentum in the 1990s and 2000s, have brought about positive changes in most of the indicators of banking performance. Much of the serious reforms that impacted on the quality and health of the banking sector happened after 1999. Indicators like the broad money (M2) to GDP ratio, which is often used as an indicator of the depth of the financial sector, has risen from 12% in FY80 to 52% in FY15, but thereafter declined to 48% in FY19. Similar developments are observed in domestic credit extended by the banking

system, which reached a peak of 49% of GDP by FY15 from 14% of GDP in FY80, but thereafter the total bank credit as a share of GDP declined to 47% of GDP by FY19. In the absence of a well-developed capital market, the growth in private credit has played a major role in supporting the expansion of the private sector in Bangladesh.

Figure 1: Indicators of Growth in Banking Activities from FY10 to FY19



Source: Bangladesh Bank Monthly Economic Trends

The positive gains in financial deepening notwithstanding, a comparison with the regional comparator countries clearly indicates that Bangladesh is still very much behind most regional comparators. Bangladesh lags behind India in terms of financial deepening and well behind countries like China and Vietnam.

Table 2: Indicators of Banking Activities for Selected Countries (2018)

Country	M2/GDP	Bank Credit/GDP
Bangladesh	64.3	46.8
China	199.1	161.1
India	73.7	50.0
Pakistan	58.0	18.8
Vietnam	158.1	133.1

Source: World Development Indicators

One of the most important indicators of the health of the banking sector is the Non-Performing Loan (NPL). Table 3 shows that there was a sharp decline in the share of non-performing loans (NPLs) from a high of 41% in 1999 to the lowest point of 6.1% in June 2011, but it has been on the rise since then – up to almost 12% at the end of FY19. This major positive development for the banking sector was turned upside down by a series of banking scams. There are also serious concerns about the portfolio quality of the public sector banks that are not properly reflected in the data. Both SCBs and PCBs recorded impressive improvements in terms of addressing the NPL problem. In particular, the NPL ratio of commercial banks declined to 6.1% 2011, compared with more than 41% in 1999. Thereafter, the overall NPL increased to almost 12% by the end of FY19.

Improvements were also been made in meeting capital adequacy requirements, with the industry-wide risk-weighted capital adequacy ratio exceeding 11% as of June 2011, and has remained so until the end of FY19. In particular, the risk weighted capital adequacy

ratio of SCBs also increased to 11.7% in 2011 from only 5.3% in 1999, in part supported by recapitalization of these banks by the government to meet the capital adequacy requirement stipulated under the Banking Act. But the ratio fell to 8.5% at the end of FY19. The year 2011 was of significance given the favorable outcomes of the banking sector indicators in the post-reform scenario.

Table 3: Indicators of Health of the Banking Sector (Percent)

Indicators	1999 Pre-Reform Baseline	2011 Comparator Best Year	2019 Latest Available
Share of Non-Performing Loans: Overall	41.1	6.12	11.99
Share of Non-Performing Loans: Private Banks	27.1	2.95	7.43
Share of Non-Performing Loans: Foreign Banks	3.8	2.96	6.01
Share of Non-Performing Loans: State Commercial Banks	45.6	11.27	31.50
Share of Non-Performing Loans: Public DFIs	65.0	25.55	17.81
Risk-Weighted Capital Ratio: Overall	7.4	11.35	11.70
Risk-Weighted Capital Ratio: Private Banks	11.0	11.49	12.70
Risk-Weighted Capital Ratio: Foreign Banks	15.8	20.97	28.70
Risk-Weighted Capital Ratio: State Commercial Banks	5.3	11.68	8.50
Risk-Weighted Capital Ratio: Public DFIs	5.8	-4.49	-31.20

Source: Bangladesh Bank Quarterly

Profitability of banks measured against the rates of return on assets (ROA) and rates of return on equity (ROE) had experienced a deterioration in recent years. Both ROA and ROE deteriorated steadily since the post-reform peak reached in 2011, with ROA dropping to 0.3% and ROE sliding to 4.7% at the end of FY19 (Table 4).

Table 4: Profitability of the Banking Sector (Percent)

Types of Banks	Return on Assets			Return on Equity		
	1999 Pre-Reform Baseline	2011 Comparator Best Year	2019 Latest Available	1999 Pre-Reform Baseline	2011 Comparator Best Year	2019 Latest Available
All Banks	0.2	1.54	0.3	5.24	17.02	4.7
Private Banks	0.8	1.59	0.7	15.32	15.69	9.5
Foreign Banks	3.5	3.24	2.6	41.84	16.58	13.4
State Commercial Banks	0.0	1.34	-0.8	-1.08	19.66	-16.6
Public DFIs	-1.6	0.03	-2.7	-29.40	-0.92	-14.2

Source: Bangladesh Bank Quarterly

The coverage of the banking sector in terms of branches and ATMs have improved, but as evident from Table 5, Bangladesh is far behind emerging nations like China and India,adjusting for any relevant factor for comparison purpose.

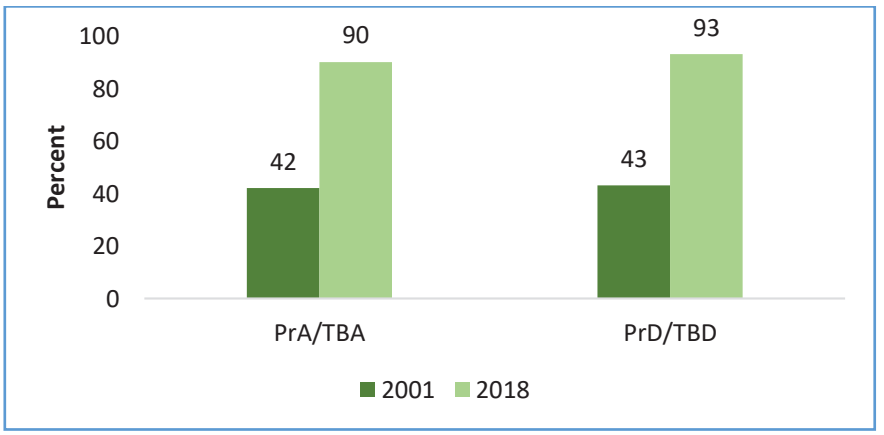
Table 5: Banking Sector Coverage Indicators for Selected Countries (2018)

Country	Number of Commercial Banks	Number of Commercial Bank Branches	Number of ATMs
Bangladesh	57	10,375	10,332
China	192	101,329	1,110,800
India	161	142,868	213,472
Pakistan	34	14,085	14,361
Vietnam	46	2,828	18,587

Source: Financial Access Survey, IMF

The three main factors that contributed to the improvement in the coverage of the banking sector of Bangladesh are greater competition for market share, better regulations and improved supervision. The opening up of the banking sector to private enterprises was perhaps the most determining factor. As a result of their competition and better service quality, the share of private banks in total assets has grown from 42% in 2001 to 90% in June 2018; commensurately, the share of private banks in total deposits has expanded from 43% to 93% over the same period (Figure 2).

Figure 2: Private Sector Banks Now Dominate the Banking Sector, 2001-18



Source: Bangladesh Bank.

Competition amongst private banks and between private and public banks caused a massive increase in financial resource mobilization, introduction of new financial products and substantially better service to customers. While still catching up with international standards, nevertheless intense competition in retail banking has caused a huge improvement in banking services not only in terms of faster turn-around time for transactions but also in terms of access to modern banking facilities such as ATMs, e-banking, credit/debit cards, wire transfers, etc.

Importantly, this transformation was instrumental in improving the health of the banking sector. Thus, to a large extent the improvement in total banking sector NPLs happened due to the rising share and much better portfolio quality of private banks. Within private banks,

foreign banks performed better in terms of NPLs. Furthermore, foreign banks substantially surpass the Basel II risk weighted capital guidelines, making them the safest banks in the industry.

Banking regulations have been progressively tightened in the context of implementation of BASEL I and II guidelines. Efforts have also been made to improve the supervision capacity of the regulator, the Bangladesh Bank, through a range of technical assistance from the IMF and the World Bank.

B. Nonbank Financial Institutions

The number of Non-Bank Financial Institutions (NBFIs) in Bangladesh has increased only marginally from 31 in 2012 to 34 in 2018. The major addition in this time period was the formation of the Bangladesh Infrastructure Finance Fund Limited (BIFFL) – the third NBFI owned by the government. During this time, the number of joint-venture NBFIs has increased from 8 to 12, while the number of private NBFIs declined from 20 to 19. A surge in opening new branches from 2014 to 2017 has resulted in the number of total NBFI branches increasing from 168 in 2012 to 262 in 2018.

The total assets of the NBFIs has increased by 160%, from Taka 333.9 billion in 2012 to Taka 870.3 billion in 2018 – while their total liabilities increased at a relatively faster rate of 177%, from Taka 274 billion in 2012 to Taka 762 billion in 2018. All this has resulted in the ratio of liabilities to assets increasing marginally from 82% in 2012 to 88% in 2018. During this time period, total deposits held by the NBFIs has increased by more than 230%, from Taka 145 billion in 2012 to Taka 480 billion in 2018 – indicating an increased popularity of the NBFIs amongst the depositors primarily through higher interest rates, as well as better ability of the NBFIs to attract deposits. This increased flow of deposits has increased the ratio of deposits to total liabilities from 53% in 2012 to 63% in 2018.

The total value of loans/leases given by the NBFIs have increased by 154% from Taka 252.1 billion in 2012 to Taka 641.9 billion in 2018. The matter of concern is that during this time, the total amount of their classified loans/leases increased by an alarming 332% – from Taka 13.7 billion in 2012 to Taka 59.2 billion in 2018. This surge almost doubled the ratio of classified loans/leases to total loans/leases from 5.4% in 2012 to 9.2% in 2018.

Additional matters of concern surround over the fact that the profitability of NBFIs seems to have declined during this time period. For example, the Return on Equity (ROE) has declined by 20%, from 10.4% in 2012 to 8.3% in 2017 – while the Return on Assets (ROA) fell from 1.9% in 2012 to 1.14% in 2017. In the most recent year for which data is available (2018), financial position of the NBFI's deteriorated markedly due to a surge in classified loans and sharp drop in the ROA and ROE. The average ROE in 2018 was only one fourth of what it was in 2012, and the average ROA in 2018 was only one sixth of what it was in 2012. All indicators point to a possible further deterioration of the financial position of NBFIs in 2019, along with the move to liquidate the Peoples' Leasing by the regulator and potential undeclared insolvency of many other NBFIs.

Table 6: State of NBFIs from 2012 to 2018

	2012	2013	2014	2015	2016	2017	2018
Number of NBFIs	31	31	31	32	33	34	34
Government-Owned NBFIs	2	3	3	3	3	3	3
Joint-Venture NBFIs	8	10	10	10	11	12	12
Private NBFIs	20	18	18	18	19	19	19
New Branches	8	7	20	15	14	30	8
Total Branches	168	175	195	210	224	254	262
Total Assets (Billion Taka)	333.90	436.30	520.10	611.00	713.90	841.07	870.30
Total Liabilities (Billion Taka)	274.30	350.40	424.20	509.00	606.46	725.95	762.04
Liabilities-Assets Ratio	82.20	80.30	81.50	83.30	84.95	86.36	87.56
Total Deposits (Billion Taka)	145.40	198.30	238.50	318.10	382.43	467.98	480.10
Deposits as % of Total Liabilities	53.00	56.60	56.20	62.50	63.10	64.41	63.00
Loan/Lease (Billion Taka)	252.10	273.60	372.80	448.50	530.70	580.40	641.90
Classified Loan/Lease (Billion Taka)	13.70	16.80	19.70	40.00	38.70	52.10	59.20
Classified Loan/Lease as % of Total	5.40	6.10	5.30	8.92	7.29	8.97	9.22
Return on Equity (ROE) (%)	10.40	7.50	9.90	9.90	6.90	8.30	2.50
Return on Assets (ROA) (%)	1.90	1.50	1.80	1.80	1.00	1.14	0.32

C. Bangladesh Bank and Monetary Policy Management

Background

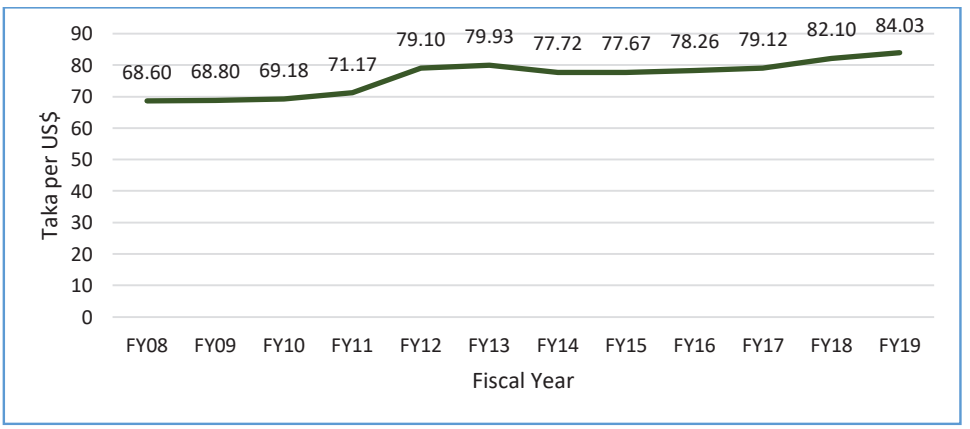
Bangladesh Bank (BB) is responsible for the overall monetary management in the economy and announces its policy stance through periodic Monetary Policy Statements (MPSs). Until now BB has been trying to manage domestic liquidity through targeting of reserve money under indirect monetary policy framework, along the lines outlined in the MPS. The underlying broad money (M2) targets are based on the government's growth targets and the target for limiting inflation, with some scope for increased monetization in the economy. This policy framework has generally served the economy well in terms of maintaining price and exchange rate stability. Interest rates in the banking system has been allowed to be freely determined since the shift in policy stance January 2012 when imbalanced developed due to failures in containing domestic liquidity within the targets stipulated under the MPS of that time.

Prior to that interest rates were kept capped at 13% maximum level and there was laxity in managing domestic liquidity leading to inflationary pressures and external sector imbalances. By November 2011, the general inflation reached almost 12%, the highest level since 1998, and government borrowing from the banking system to finance budgetary operations already crossed the borrowing limit established in the budget for the whole year. Increased import payments associated with higher petroleum prices and volume of imports, started to exert pressures on the exchange rate and the level of foreign exchange reserves in the second half of 2011. Because of successive years of significant deviations between the announced MPS stances and their implementation, in the guise of so called

"accommodative" monetary policy, initially there was a certain amount of skepticism about Bangladesh Bank's resolve in pursuing a restrained monetary policy in line with the quantitative monetary targets. **The tightening of monetary stance that started in FY11 was partly a response to contain domestic demand and inflation and help stabilize the balance of payments which was coming under pressure.**

The impact of monetary expansion on asset prices was quite costly for the economy in that period. The liquidity expansion helped create a large bubble in the already overvalued capital market. Real estate prices also experienced an unprecedented surge. On the other hand, significantly higher inflation than Bangladesh's major trading partners coupled with virtual peg of Bangladesh Taka against the US dollar (at about Tk. 69 per US$1.0) reduced competitiveness of domestic products and made imports cheaper in real terms. These developments, coupled with increased domestic demand due to monetary expansion above reasonable levels, widened the trade and current account deficits. The resulting balance of payments pressure forced BB authorities to allow the Taka to depreciate through market forces in 2011, following a substantial period of virtually pegged exchange rate. The monetary tightening and exchange rate measures helped contain the expansion of monetary aggregates close to the monetary targets of BB.

Figure 3: Exchange Rate Movements of the Taka Against the US Dollar from FY08 to FY19



Source: Bangladesh Bank

The lessons from 2012 episode was that market based determination of interest rates and the exchange rate are critically important for macroeconomic stability for preventing disequilibria in the money and foreign exchange markets. Until now BB authorities have not interfered with the market based interest rate determination and this policy helped mitigate impacts of such distortionary policies like: keeping interest rates on instruments issued by the National Savings Directorate (NSD) at arbitrarily high level; very high levels of non-performing loans; and increased access to credit for the small and medium enterprises (SMEs).

However, the lessons from the 2012 episode appear to be forgotten, and new imbalances are appearing both in the money market and in the balance of payments (BOP). Following a few years of market based exchange rate determination, the exchange rate for Taka is

once again being artificially fixed in the interbank foreign exchange market ignoring the growing imbalances in the BOP and the lack of competitiveness of Bangladeshi exports. The relatively higher inflation in Bangladesh compared with its trading partners and competitors, and the nominal depreciation of currencies against the US dollar by the competitor countries have contributed to a significant overvaluation of the exchange rate in real effective terms. The spread between the interbank and curb market exchange rates has widened to more than Tk.4 per dollar compared with standard difference of Tk. 1-1.5 per dollar in normal market conditions.

Pressures are also building up for fixing the maximum lending interest rate capped at 9%, without regard to risk-return relationship. The policy under consideration also mandates fixing the maximum return on bank deposits at 6%, without regard to domestic liquidity situation, differential with the interest rates offered for NSD instruments, the relative attractiveness of taka assets, and possible adverse impacts on the deposits of the banking system. The government's objective to reduce the interest rate structures in Bangladesh is understandable, but the intention to tackle the problem through administrative means will certainly be counterproductive.

D. Recent Setbacks to the Banking Sector: Banking Scams and Default Loans

As of November, 2019, the banking sector's total default loans stood at Taka 96,986.38 crore, up [6.59] percent from the first quarter, according to Bangladesh Bank data. The amount is 10.75 percent of the total outstanding loans. The state-run BASIC Bank alone accounted for Tk 2,034 crore of the default loans, which was 40.77 percent of its total outstanding loans. The default loans of four state-owned commercial banks' increased by Tk. 1,030 crore between the months of April and June, with Agrani Bank alone accounting for Tk. 571 crore of the total increase. The default loans of private commercial banks rose by Tk. 632 crore, with just two banks responsible for 80 percent of the sum. Foreign banks also saw their default loans increase Tk 196 crore.

Another reason behind the increase in default loans was that in recent years many loans were given through fraudulent practices, which are now gradually becoming defaults. The carryover of the losses incurred by investors in the stock market with borrowed funds (margin borrowing), which were not classified and provisioned against under special arrangements with Bangladesh Bank, is also adding to the amount of classified loans. The bad financial performance of public sector enterprises, including the jute sector entities' rise in default loans to state-owned banks, also contributed to this development.

Box 1: Banking and Other Financial Scams of Bangladesh

In this environment of an unfinished financial sector reform agenda, the recent unfortunate scandals involving the state-owned banks and some nonbank institutions raise considerable concern and anxieties. Serious questions emerged regarding the health of the banking system and the capability/effectiveness of the regulatory regime: First, how the recent scams in the public banks undermined the financial health of the banking sector; Second, adequacy of banking safeguards in Bangladesh; and Finally, appropriateness of the banking oversight arrangements in Bangladesh. Below are some of the major scandals that rocked the financial system in Bangladesh in recent years:

Sonali Bank/ Hallmark Scandal

In May 2012, a report from the Bangladesh Bank revealed that the Ruposhi Bangla Hotel Branch of the state-owned Sonali Bank, Bangladesh's largest commercial bank, illegally disbursed Tk. 36.48 billion (US$460 million) in loans between 2010 and 2012. The largest share, of Tk. 26.86 billion (US$340 million), went to the now infamous Hallmark Group. While the focus has understandably been on Hallmark, other companies also participated in the fraud, including: T and Brothers (Tk. 6.10 billion), Paragon Group (Tk. 1.47 billion), Nakshi Knit, (Tk. 660 million), DN Sports (Tk. 330 million) and Khanjahan Ali (Tk. 50 million). The alleged scams exploited the inland Letter of Credit (LC) system of financing trade. Hallmark is accused of establishing fake companies which were shown as recipients of the LCs. These companies submitted falsified paperwork reporting deliveries of fabrics to Hallmark, which were then paid for by the LCs from Sonali Bank's Ruposhi Bangla branch. Because the fictitious companies and Hallmark had their accounts at the Ruposhi Bangla branch, on paper it looked like the branch's assets and liabilities were balanced out. Another financial practice, known as Inland Bill Purchases, was then used to spread some of the bad loans throughout the banking system. Portions of the bad loans were passed on to twenty-seven other banks. According to the findings of a parliamentary committee probe, of the Tk. 26.86 billion loaned to Hallmark, only about Tk. 4 billion was actually invested and the remaining amount could not be traced.

Irregularities found in BASIC Bank

Another Banking sector scam that has gained a lot of attention is the BASIC Bank's irregularities with its loans. The amount of non-performing loans of the scandal-hit state-owned BASIC Bank now stands at over Tk. 4,157 crore, or 36.55% of the bank's capital. The bank's Gulshan, Dilkusha and Shantinagar branches have disbursed much of the loans violating loan guidelines. In many instances, false papers were used to provide loans. The observation is that the whole management, and the Board of the bank had colluded to grant loans in violation of standard banking practices, and the irregularities continued for 4-5 years.

The Destiny Multipurpose Cooperative Society Ltd (DMSCL) fiasco

The alleged fraudulent activities of the multilevel marketing (MLM) company Destiny 2000 Limited have stirred the whole nation recently. The Department of Cooperatives (DoC) had detected financial irregularities of around Tk. 1,450 crore in the operations of Destiny Multipurpose Cooperative Society Ltd (DMCSL), a sister concern of the controversial Destiny 2000 Group. The irregularities unearthed were-- misuse of funds, unauthorised expenditures and investments, recruitment of members, commission and overvaluation of assets -- through an investigation that took about four months. The non-financial irregularities found by the DoC are: enrolment of fake members and concealment of information about investments in other entities. The DMCSL had only 167 members in 2006-07, but it rose to 0.64 million in 2010-11 and nearly 0.85 million in 2011-12. DoC investigation also found that most of the entities where DMCSL invested exist only in paper.

Losses Incurred by the Banking System in Chittagong: The Bismillah Group and Others

According to a Bangladesh Bank report, Bismillah Group swindled about Tk. 1,100 crore from state-run Janata Bank and four private commercial banks — Prime Bank, Shahjalal Bank, Jamuna Bank and Premier Bank -– showing fake export documents, taking government's cash incentive to open business firms abroad and with accommodated bills through Letters of Credit (LCs). Other business groups in Chittagong also incurred heavy loan losses due to commodity price fluctuations and wrong/speculative investment decisions.

Janata Bank Loan Scam

The recent banking scam that has received attention is Janata Bank's loan irregularities. The bank, which is a public sector bank, sanctioned Tk.5,504 crore loans to Anon Tex group, an apparel exporting company that had previously failed to payback it's loans. Janata Bank broke its conventional five layer of scrutiny to sanction loans in this case without regard to the company's previous loan default records. The loan amount not only accounted for more than 25 percent of the state-owned bank's capital base, but also was in violation of the single borrower exposure limit set in the Bank Company Act 1991.

E. Microfinance

The number of microfinance institutions in Bangladesh has grown phenomenally over the years, and as of 31st December 2019, 758 MFIs have been issued licences by the Microcredit Regulatory Authority (MRA) to operate Micro Credit Programmes. At the same time, 118 MFIs saw their licences cancelled by the MRA, while 92 MFIs saw their temporary licences cancelled.

The Grameen Bank is outside the jurisdiction of MRA as it operates under a distinct legislation- Grameen Bank Ordinance, 1983. Microcredit programmes (MCP) in Bangladesh are implemented by various formal financial institutions (nationalized commercial banks and specialized banks), specialized government organizations and Non-Government Organizations (NGOs). Despite the fact that more than a thousand institutions are operating microcredit programmes (registered and unregistered), only 10 large Microcredit Institutions (MFIs) and Grameen Bank accounts for 87% of the total savings of the sector and 81% of total outstanding loans of the sector. Details of MFI development over the past few years are given below.

Table 7: Indicators of Microfinance Institutions

Particulars	June-09	June-13	June-17	Sep-19
No. of Licensed NGO-MFIs	421	649	784	758
No. of Employees	107,175	110,734	137,607	
No. of Clients (Million)	25	25	35	
No. of Borrowers (Million)	19	19	25	
Amount of Loans Outstanding (BDT Billion)	143	257	278	640
Amount of Savings (BDT Billion)	51	93	113	

Source: Microcredit Regulatory Authority

Despite impressive growth in recent decades, in terms of relative size microcredit institutions account for less than 10% of the banking system assets, and its client base also seem to have already peaked at about 35 million. The number of borrowers have actually declined and stands at less than 25 million in 2017. The volume of lending is still growing at a relatively healthy pace supported by growth in mobilization of savings and larger loan size. However, many MFIs are now looking at financing small enterprises to sustain their business with larger amounts of loans per person/enterprise.

F. Financial Inclusiveness: The Growing Importance of Branchless Banking

One of the main prerequisites for achieving growth and making the growth inclusive in nature is enhanced access to finance. The poor and the vulnerable groups are most likely to benefit from inclusive financial systems which have limited or no price or non-price barriers. Without such financial inclusion, the poor are mostly dependent on their own limited savings and earning to invest.

Commercial Banks are traditionally considered to be the first option for providing a wide range of financial services. However, commercial banks fail to cater the credit needs of poor people due to perceived high risk and high transaction costs associated with small loans and saving deposits. In addition, travelling to and queuing at distant branches of banks might also mean forgoing their daily wages as bank branches can be located quite far away.

There is also an absence of better serviced credit, savings, payments, insurance (safety net/ micro insurances) etc. Government has tried to improve inclusion through policies, regulations, and even direct intervention and subsidies (e.g. The Taka 10 bank account effort by Bangladesh Bank, discount lending facilities for SMEs, interest rate ceilings on micro credit, one rural branch opening for each new urban branch etc.).

Bangladesh Bank has advocated for mobile operators and MFIs to be active partners. It has provided a number of licenses to banks to offer the full range of mobile financial services and this regulatory certainty has set the market in motion. Mobile phone companies now have technology and networks that reaches some of the most remote parts of the country, and with a big part of the population having access to cell phones; it is much more feasible for them to make their transactions through thousands of retail outlets like local village shops.

By late 2011 and into 2012 two early leaders have emerged with the largest customer bases and agent networks, The bKash service and Dutch Bangla Mobile. The bKash service is provided by BRAC Bank in cooperation with its subsidiary bKash. Dutch Bangla Mobile is a service from Dutch Bangla Bank. Such services are also provided by others like Trust Bank Ltd., Bank Asia, UCash service from United Commercial Bank Ltd., MyCash from Mercantile Bank Limited and the Fast Cash service from E-Cash Ltd.

Bangladesh's first complete mobile financial service provider, bKash Limited, a BRAC Bank subsidiary, launched its mobile banking operation in July 2011. bKash is designed to provide financial services via mobile phones to both the unbanked and the banked people of Bangladesh. The overall bKash value proposition is simple: a safe, convenient place to store money; a safe, easy way to make payments and money transfers. The bKash mobile wallet is a VISA technology platform, which is fully encrypted to ensure most secure transactions. The mobile wallet is essentially the customer account into which money can be deposited and out of which money can be withdrawn or used for various services. Customers are able to receive electronic money into their bKash accounts through salary, loan, domestic remittance, and other disbursements and eventually cash out the electronic money from bKash authorized agents/ATM.

Dutch-Bangla Bank Limited (DBBL) is the first bank in Bangladesh, which introduced mobile banking service to bring poor people from remote area under smart banking service. DBBL is operating this new innovative banking service through Banglalink and their approved agents throughout the country.

It can be observed from Table 8 that value and volume of mobile money transactions have grown phenomenally in the last several years explaining the growth in the number of agent outlets and mobile money accounts.

Table 8: Indicators of Mobile Banking for Bangladesh (2011-2018)

Indicators	2011	2014	2018
Number of Registered Mobile Money Accounts	125,506	24,200,000	67,700,000
Number of Active Mobile Money Accounts	7,186	9,498,627	37,300,000
Number of Registered Agent Outlets	5,654	544,565	883,906
Number of Active Agent Outlets	2,551	240,213	438,437
Number of Mobile Money Transactions (During the Reference Year)	229,592	548,000,000	2,270,000,000
Value of Mobile Money Transactions (During the Reference Year) in Million Taka	476	1,030,899	3,788,985
Outstanding Balances on Active Mobile Money Accounts in Million Taka	44	6,073	126,056

Source: Financial Access Survey, IMF

G. Challenges and Concerns Relating to the Banking Sector

Although the banking sector has had its share of success, there are a number of serious concerns that remain and are likely to intensifying if remained unattended.

First, there are sharp differences in the performance of banks, especially between private and public banks, and increasingly also among the private banks. For example, as of September 2019, the gross NPL of private banks was 7.43%, but it was 31.5% for the state-owned commercial banks and 17.81% for public specialized development banks. Furthermore, the reported NPL numbers likely understate the true portfolio quality problems in the public and private banks because they do not fully account for the effects of the scams, the losses incurred by the merchant banks due to the bursting of the stock price bubble, the quality of regulatory standards are not as stringent as they should be, and the quality of accounting standards are also not up to the mark.

Second, there are important issues relating to the corporate governance of banks. Due to political connections and influences some private banks are able to bypass standards relating to fit and proper criteria for bank board and management. Importantly, public banks are not within the purview of the supervision of the Bangladesh Bank. As such, there are serious concerns about the quality of the board and top management of these banks. Furthermore, their compliance with prudential regulations is weak.

Third, the capacity and flexibility of Bangladesh Bank to supervise the banking industry and implement prudential measures are often constrained. Owing to lack of autonomy, Bangladesh Bank often cannot withstand political pressure that compromises prudential management. Similarly, its operational flexibility is inadequate. For example, it does not have wage setting flexibility and as such cannot hire quality staff. As a result, quality of bank supervision suffers in many ways such as banks sometimes bypassing the prudential standards for liquidity ratios, compliance with credit/deposit ratios, exposure to stock markets, compliance with capital adequacy and accounting standards.

Fourth, there is widespread allegation from the business community that bank interest rates and charges in Bangladesh are too high. These high interest rates have adversely impacted investment and domestic economic activity. This however is an important economic policy issue at the national level and will require careful review of many related aspects of Bangladesh economy and macroeconomic management before making an informed policy

decision in this regard. Administrative interventions to enforce lending rates through non-market mechanism must be avoided.

Fifth, the experience of the past few years has shown that the lack of autonomy of BB is particularly constraining in regard to the conduct of sound monetary policy and the granting of licenses for new banks. Monetary policy was overtly expansive during FY10-12 partly owing to pressures from the Government to pump liquidity in the stock market and the financing of Treasury operations. This led to considerable damage to underlying economic outcomes including the fueling of inflation, contributing to asset price bubble and putting pressure on the exchange market during those years. Similarly, undue Government pressure has forced BB to issue many new licenses for establishing new private banks at a time when most analysts believe Bangladesh already has too many private banks and contribute to insolvency and/or profitability problems for existing banks.

Finally, In the area of new bank licenses, the BB management approached the political challenge as professionally as possible by laying down strict performance criteria than in the past for the selection of the new banks. Yet, these experiences are illustrative of the risks of political interventions in the conduct of the functions of BB that must be averted to establish a healthy banking system.

2.4 Capital Market Developments and Issues

In last two and half decades, capital market witnessed a number of institutional and regulatory advancements which have resulted diversified capital market intermediaries. At present, capital market institutions and intermediaries are of following types: Stock Exchanges, Stock Dealer/Sock Brokers, Merchant Bankers and Portfolio Managers, Asset Management Companies, Credit Rating Companies, Trustees/Custodians and the Investment Corporation of Bangladesh (ICB). The primary segment of capital market is operated through private and public offering of equity and bond instruments. The secondary segment of capital market is institutionalized by two stock exchanges--Dhaka Stock Exchange and Chittagong Stock Exchange. The instruments in these exchanges are equity securities (shares), debentures, corporate bonds and treasury bonds. The capital market in Bangladesh is regulated by Bangladesh the Securities Exchange Commission (BSEC).

During 2007-10 the capital market in Bangladesh has grown much faster than the other segments of the financial market. This growth in the capital market was initially fueled by stronger economic fundamentals compared to valuation of stocks. Afterwards, speculative forces had taken various key market indicators like the market capitalization, price earnings ratio and market turnover to unprecedented levels. Table 9 shows some selected indicators of capital market developments referring to three choice of years, FY07 representing the pre-bubble era, FY10 representing the peak bubble year and finally FY19 showing the current year scenario. It can be observed that market capitalization and the DSE General price index increased dramatically during 2007-10 reaching a peak in 2010.

Table 9: Indicators of Capital Market Developments (DSE)

	FY 2007 Pre-Bubble	FY 2010 Peak of Bubble	FY 2019
Number of Listed Securities	281	279	363
Issued Equity and Debt (Billion Taka)	84	213	720
Market Capitalization (Billion Taka)	412	2,277	3,437
Turnover (Billion Taka)	0.2	2.7	4.0
General Price Index	2,149	6,154	N/A
DSE Broad Index	N/A	N/A	5,422
DSE-30 Index	N/A	N/A	1,929

Source: Bangladesh Bank.

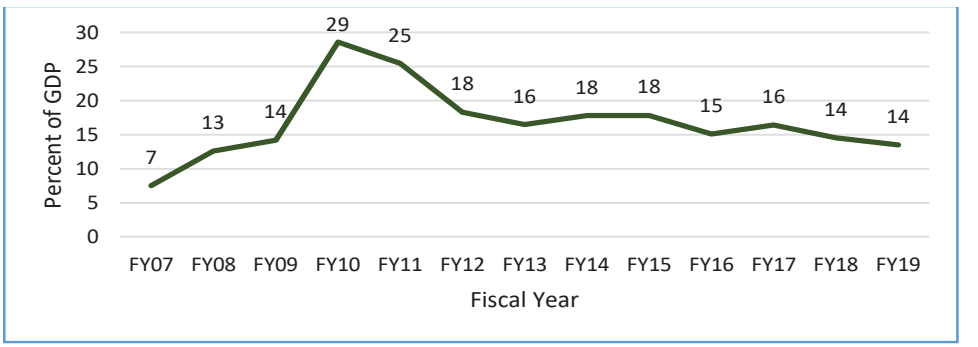
H. Historical Background of the Capital Market

Although Bangladesh capital market came into existence in early 1950, for the next 40 years it failed to generate much activity. All key market indicators like the number of companies traded in the capital market, market turnover and market capitalization in relations to GDP remained very low relative to its regional comparators. Market regulations and its governing structure were not up-to-date and the regulatory environment was very weak. This weak governance and institutional structure contributed to the formation of first speculative bubble and subsequent burst in 1996. The speculative bubble and burst episode hurt the stock market activity for a long time but led to some operational improvements such as: the Dhaka Stock Exchange (DSE) started trading on computers in August 1998; the Central Depository Bangladesh Limited (CDBL) was incorporated as a public limited company in August 2000 to operate and maintain the Central Depository System (CDS); the CDS was incorporated as an independent company in January 2004.

I. Recent Developments in the Stock Markets

The capital market flourished noticeably due to stronger economic fundamentals of the listed companies, various measures by its regulator BSEC and opportunity of gaining more returns from holding stocks. In 2003, stock market capitalization accounted for only 4% of the total assets of the financial system, which increased sharply to 29% by 2011 before a major downward market correction in 2011. Market capitalization as a percentage of GDP increased from 5.5% in 2005 to more than 46% at its peak, before falling to 14% at the end of June 2019.

Figure 4: Market Capitalization to GDP Ratio from FY07 to FY19



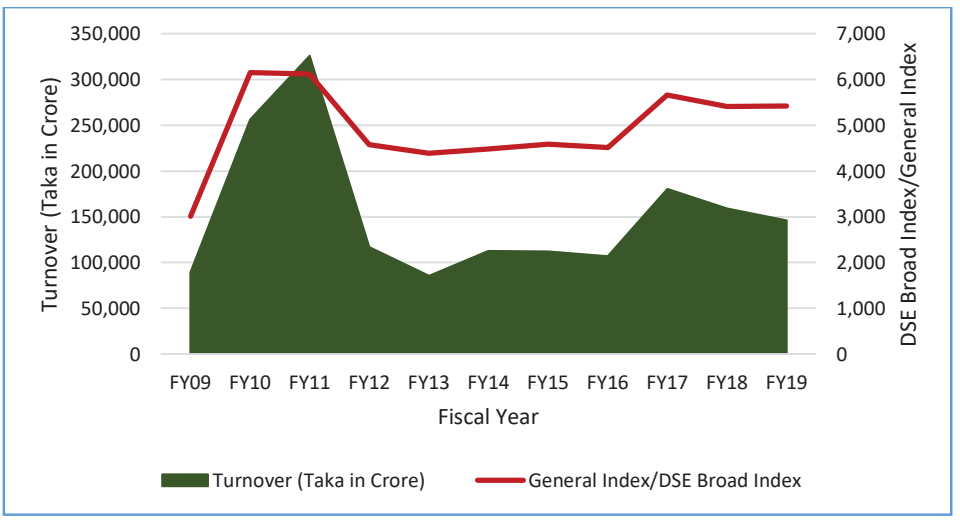
Source: Bangladesh Bank Monthly Economic Trends

Market capitalization of the stock market reached 31.8% of the total financial sector in 2010, when the capital market passed through a bubble phase.

J. Turbulent Episode, 2009-13

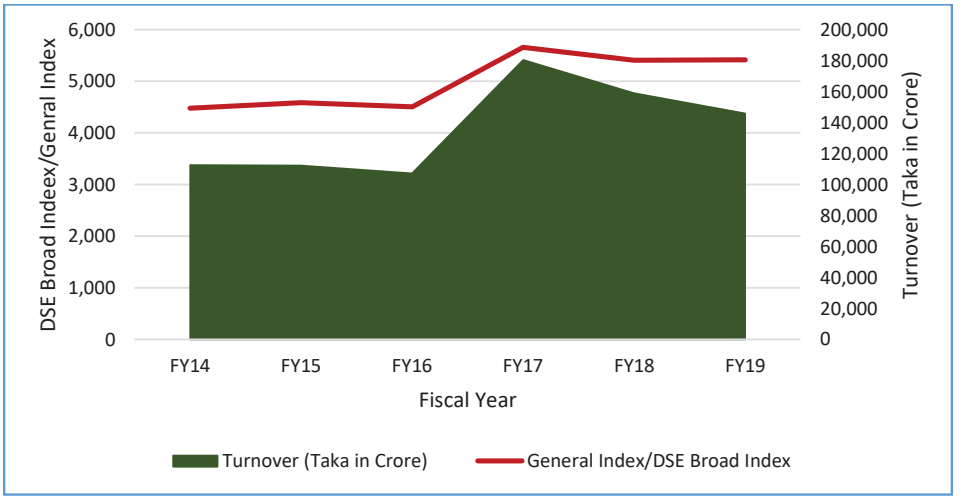
Bangladesh stock market had passed through a turbulent period in recent years. Following a bull run that started in second half of 2009, the stock price index as measured by DGEN Index reached a peak of 8919 in December 2010. Market turnover as percentage of market capitalization also increased from 19% in 2006 to about 114% at its peak coinciding with the surge in the DGEN Index, before falling to 42% at the end of June 2019. Like all bull runs and the associated bubble, the stock price bubble in Bangladesh also came to an end in December 2010. In the midst of the correcting phase, the Government had announced a number of initiatives to support the stock market and used sizable amounts of public funds to support the market without any visible impact. The DSE Broad Index declined sharply during 2011-13 and remained range bound thereafter. As of June 2019, the index stood at around 5,500 level, but thereafter declined further to below 4500 level in January and early February 2020. At the same time the market remained volatile, directionless, and the daily value/volume of transactions plummeted from their peak levels. The market sentiment also suffered from continued overhang arising out of unsettled BO accounts of retail market participants. More recently, instability in the money market, arising from liquidity crunch in the banking system and the consequent sharp rise in the interest rates also had a toll on the market.

Figure 5: Trends of the Dhaka Stock Exchange from FY09 to FY19



Source: Bangladesh Bank Monthly Economic Trends

Figure 6: Recent Trends in the Dhaka Stock Exchange from FY14 to FY19

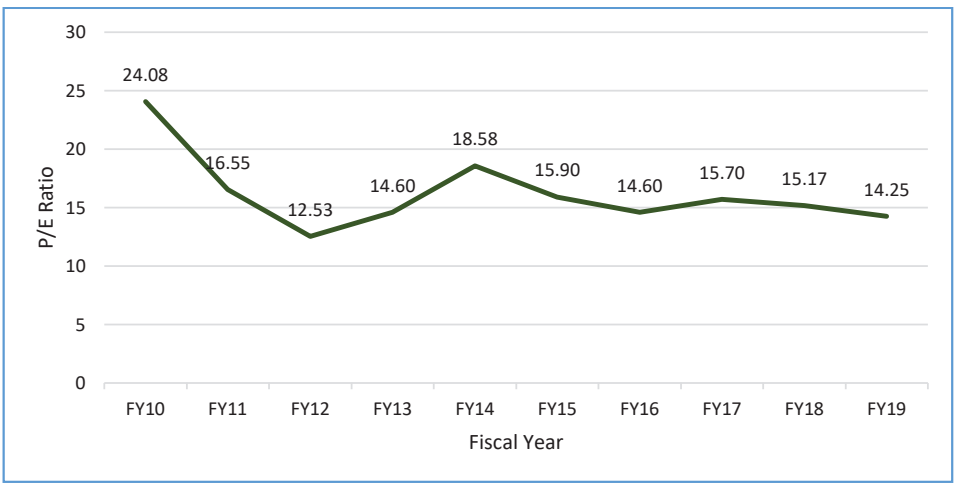


Source: Bangladesh Bank Monthly Economic Trends

K. Recent Levels of Key Market Indicators-Price-Earnings Ratio, Dividend to Yield Ratio and Market Turnover

As regard valuation, certainly the current Price-Earning (P/E) Ratio of 14.25 as of June 2019 is certainly much more attractive from investors' perspective compared with the average P/E Ratio of 24.08 at its recent peak in June 2010 (Figure 7). Accordingly, investors' interests returned and by 2013 the stock prices started to recover, and the P/E ratio hit a three-year high of 15.1 toward the end of 2013. The P/E ratio thereafter has remained broadly stable at around 14-16 range, which is healthy.

Figure 7: P/E Ratio at the Dhaka Stock Exchange from FY10 to FY19

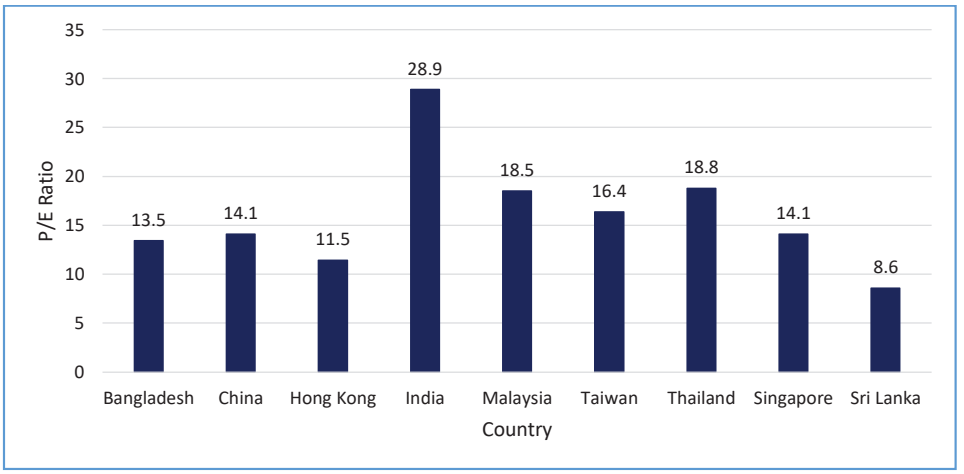


Source: Dhaka Stock Exchange Monthly Review

A review of DSE's past performance and a comparison with regional comparators indicates that:

- DSE average P/E ratios were not low even after the correction compared with the P/E ratios observed in the period prior to the beginning of the recent bull-run in the DSE. The P/E ratios generally ranged between 10-18 during 2005 and 2006.
- An international comparison with a wider range of markets indicates that the average P/E Ratio of 13.5 for the DSE in July 2019 was in line with the levels observed in most countries such as Thailand, Malaysia, Sri Lanka and Hong Kong. The P/E ratio of DSE remained at more than 15 until June 2018, but fell to 13.5 in July 2019. As a matter fact, despite the sharp fall, Bangladesh P/E ratio is still not significantly out of line with many comparator countries. The only outlier is India, which is considered to be over-valued and many are predicting that the Indian market valuations are out of line with market fundamentals.
- Bangladesh's dividend yield at close to 4% also compares very favorably with all other regional comparators.

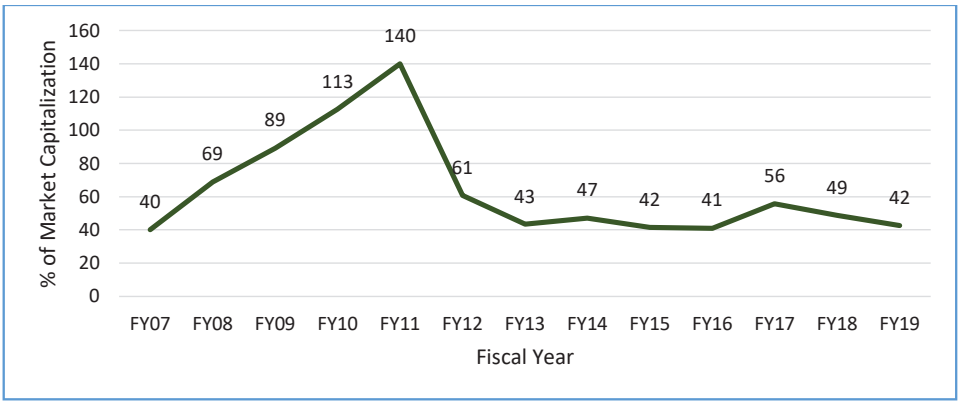
Figure 8: P/E Ratio in Bangladesh and Some Asian Markets as of July 2019



Source: CEIC

Market dynamism is generally measured in terms of market activities like the value of daily turnovers or volume of buys/sales. In order to filter the volatility in daily turnover due to various reasons we measured the 20-day moving average for DSE daily turnover as percent of market capitalization for a longer period. It is noteworthy that, despite smoothing out through the moving average method, the ratio has been quite volatile and broadly followed the trend in the DSE Index. Both of these phenomena are also observed in other markets that passed through similar boom and burst. What is important is that despite the steady decline, the turnover ratios were still comparable with its levels recorded during 2004-06 and before when the market was functioning in a stable environment.

Figure 9: Turnover as a Percentage of Market Capitalization from FY07 to FY19



Source: Bangladesh Bank

L. Regulatory Reforms to Govern the Stock Markets Progressed Well Supported by ADB

The stock market debacle of FY11 exposed the inadequacies in the stock market operations and the prevailing policies and practices. The report prepared by ADB identified "government tutelage over the capital markets" as the most critical problem "holding back sector development and constrains responsible institutions from carrying out their mandates effectively." Combined with strong vested interest, this constrained regulatory response has resulted in entrenched status quo.

There was a general degree of convergence among the practitioners and market analysts about the key problems facing the capital markets, which were:

- Limited BSEC capability in areas of regulation, surveillance, and enforcement
- Limited financial stability oversight and policy coordination between BSEC, Bangladesh Bank and the Ministry of Finance
- Weak regulation, governance and operation of stock exchanges
- Small institutional investor and mutual fund industry: underdeveloped insurance industry serving only 1%-2% of population; nascent mutual fund segment of the financial sector
- Limited supply of bonds and equities

The key recommendations were:

- Demutualization of stock exchanges
- Enhanced coordination between regulators to enhance financial stability
- Enhancing institutional investor demand and promote the mutual fund industry
- Enhancing supply and demand of equities and bonds

A review of reform measures recommended after the stock market debacle indicates that all the key measures had been implemented in the context of the ADB programme (Table 10)

Table 10: Key Policy Actions and Current Status of Reforms under the Second Capital Market Development Programme of ADB

Policy Actions	Status
Submission to Parliament of amended BCA with the objective to contain risks posed by equity markets through consolidated supervision.	BCA was passed by Parliament on 7 July 2013
Reduce banks equity risk exposure by introduction of BB Guideline to establish a limit for total direct and indirect exposure to equity risk as a percentage of capital, applicable on a solo and consolidated basis once the amended BCA is passed.	Bangladesh Bank has issued the circular with regard to equity risk exposure as percentage of capital applicable on a solo basis on 16 September 2013.
SEC has undertaken a review of the capital requirements for intermediaries through a risk-based supervision approach.	The review was completed on 5 October 2013.
Reports generated from the Market Surveillance System to be part of improved monitoring of the capital markets.	A manual for usage of the surveillance system and report generation was prepared. All activities related to this action were completed on 5 October 2013.
Submission to Parliament of FRA Bill to include (i) establish an independent Financial Reporting Council (FRC) (ii) license auditors and accountants and (iii) establish an independent administrative tribunal to hear appeals	Cabinet approval of the FRA bill has been obtained in November 2014. Thereafter it was passed by Parliament.
SEC has established and staffed the Office of Chief Accountant including adoption of guidelines for the accountants and auditors.	Complied With.
Establish a special tribunal for capital market related cases.	Capital market tribunal was established on 7 January 2014.
Submission to Parliament of Demutualization Act. (SEC and MOF-BFID)	Demutualization Act was passed by Parliament in April 2013.
BB to devolve at a yield which is the average of all submitted bids by the Primary Dealers (PDs) and non-PDs in an auction, excluding outliers.	Circular published on 3 Oct 03, 2012.
Exemption of the 3% tax on IMP premiums by amending Section 16 (E)/53L and exemption of transactions taxes for bonds by amending Section 53 (BBB) of the Income Tax Ordinance	Complied with.
Ensure that the sale of receivables to an SPV in connection with the securitization of assets is exempted from the stamp duty on conveyance of assets	Complied with. This was included in the Stamp Act amendment during the budget session in June 2013.
Circulars Implemented and fully operationalized	Complied with.
Amend Securities and Exchange Commission rules 2001 (Rule no. 55) to allow Asset Management Companies greater investment flexibility by allowing them to reduce their exposure to equity securities below the stipulated 75% if stated in the fund's prospectus	Complied with. The rules were issued in March 2013.
Allow investors in private sector open end mutual funds the same tax advantage as ICB open end mutual funds as the one applicable to investors in ICB open-end mutual funds	Complied with. This was included in the Finance Act during the budget session in June 2013.

2.5 Bond Market

Bonds, though they have worldwide popularity as security, have little impact in the securities market of Bangladesh with trading of only a few enlisted bonds. Currently Bangladesh bond market plays a very insignificant role in the economy. Neither the policy makers nor the corporations have shown any substantial interest in bonds. In the absence of significant number of bonds, general investors have little idea about how bond market should work.

During 1987–2005 only 17 debentures were issued through public offerings. The eight debentures still outstanding in August 2018 had an issue value of only $4 million. The corporate bond market faces important constraints—but also has potential for growth in bank and infrastructure bonds that could spark its development. There are only 2 corporate bonds currently operating in the country – the IBBL Mudaraba Perpetual Bond *(listed in 2007)*, and the APSCL Non-Convertible and Fully Redeemable Coupon Bearing Bond *(trading since 16th January, 2020).*

Constraints on the development of the Bond Market

A number of factors including supply side constraints, such as, a lack of benchmark bonds, inadequate regulatory system, market distortions due to national savings schemes, and a lack of interest from private companies in the bond market because of high costs, default of debentures in the past, and the general preference of investors in the equities rather than in bonds are responsible for the sluggish growth of the bond market in Bangladesh. Moreover, the secondary market in the government securities is illiquid, which hampers the proper pricing of treasury bonds in the primary market.

Some of the corporate debentures (bonds) issued in early 1990s defaulted on the interest payments. At that time, the market was not well regulated and credit rating was not required. In addition, failure of trustees to enforce debenture holders' rights and the weak legal framework for contract enforcement had also eroded investor confidence in the market. The negative image of past bond issue has not yet been cleared, which has created a reluctant sentiment on the part of investors to purchase corporate bonds.

The growth of the corporate bond market also suffers due to the poor state of the Government bond market and obscure regulatory requirements and a long approval process. National savings scheme is intended to encourage individual savings at high interest rate. Considering that national savings certificates are risk-free bonds, interest rates are very high, causing major distortions in the financial market and leading to crowding out of other savings products. Therefore, a company has to offer much higher coupon rates to entice investors to invest in corporate bonds.

Historically Treasury bond and T-bill markets were expanding steadily, backed by continued government borrowing from the banking system. This contributed to the expansion of the T-bond and T-bill markets until FY15. As the NSD borrowing accelerated since FY14, much of the domestic financing of the budget was being met through that source contributing to an eventual decline in size of the T-bill and bond markets beginning in FY16.

Over the years, the ratio of total stocks of T-bills/ government bonds as a share of total government debt is declining, while the corresponding ratio for the outstanding stock of NSD instruments is increasing. This essentially means that the government's current policy

is promoting accelerated growth of the non-traded NSD bonds, while contributing to a decline in the importance of the tradable financial instruments like bonds. This policy, if continued for several more years, Bangladesh will slowly kill its already modest and nascent bond market over time.

2.6 Insurance Sector

The insurance sector was originally regulated by the Insurance Act, 1938 and after the Independence by the Insurance Act 1973. The industry has been growing steadily ever since despite many odds. Life-insurance and general insurance are the only two products being offered by the insurance companies where general insurance is mostly bought by companies. Health insurance and home insurance are very popular and mandatory in most countries, but insurance companies in Bangladesh are yet to offer such services in any significant scale.

The Insurance Act 2010 has been enacted by updating the provisions in the Insurance Act, 1938. The Insurance Development and Regulatory Authority (IDRA) Act 2010 was also framed with a view to synchronizing functions of the existing Insurance Department in the spirit of the Insurance Act, 2010 to maintain proper control and supervision of the sector and protect the interests of policy holders and beneficiaries. Bangladesh remains behind its neighbors, both in terms of premium income and penetration. Only 1.5 per cent of the population has life insurance coverage in Bangladesh, as compared to 4.5 per cent in Pakistan and 7.5 per cent in India (as of 2010).

IDRA recognizes a total of 77 insurance companies as authorized to operate in Bangladesh, of which 30 provide life insurance and 45 are in the general insurance field. Among the life insurance companies, except the state-owned Jiban Bima Corporation (JBC) and a foreign-owned American Life Insurance Company (ALICO), the rest are domestic private entities. Among the general insurance companies, state-owned Shadharan Bima Corporation (SBC) is the most active in the insurance sector.

The Insurance Market is plagued by its various problems. **First**, there is less public awareness regarding insurance services among the vast majority of people living in rural areas who are as a result left outside the insurance coverage. People in general are not aware of the benefits from the insurance policy in Bangladesh. **Second**, most of the insurance companies are located in urban areas and there are few branches in rural areas. **Third**, the growing cost of business due to inefficient financial management—with costs rising at a faster rate than business expansion--is a hindrance that insurance companies are facing nowadays.

Going beyond the formal insurance sector, an important agenda for the insurance sector could be to develop micro-insurance products (with certain special characteristics relating to coverage, premiums, delivery channels, terms and benefits) which are of value to the poor. At present, a group of mainstream insurance companies, MFIs and professional organizations (e.g. International Network for Alternative Financial Institutions) are offering some 'micro-insurance' products which need to be objectively evaluated in terms of effectiveness of delivery mechanisms and, as appropriate, re-designed to better serve the poor.

3. External Sector Developments and Exchange Rate Management

A review of the BOP developments under the 7th Plan indicate that actual outturn has been much below Plan targets in most fronts, including exports, imports, inflow of remittances and financial account inflows (net). Export shortfall is particularly large and projected be short of the target by about $14 billion (about 15% of the target) or more by FY20. Import growth was also subdued, contributing to a more sustainable trade balance broadly in line with the Plan projections. Services account deficits were lower than projected reflecting lower volumes of exports and imports and trade and other related travels. One major disappoint has been the volume of remittance inflows, which has been much below the targets established under the 7th Plan. The inflow of remittances in FY 19, despite being a record level of $16.9 billion, was about 33% below the 7th Plan projected level of $24.3 billion for the same year.

Although the external current account balances were in deficit in certain years, that outcome was broadly compatible with the 7th Plan targets, because for a fast growing economy moderate current account deficits are sustainable. However, the inflows envisaged under capital and financial accounts fell significantly short of the Plan targets and thus contributed to a stagnation or a modest decline in the gross official reserves of Bangladesh Bank and much sharper decline of official reserves in relation to months of imports of goods and services. This shortfall is primarily attributable to a much lower level of FDI—less than 1% of GDP compared with 3% of GDP by the end of the 7th Plan—and to the slower pace of utilization of project and programme aids from official bilateral and multilateral development partners.

Table 11: Bangladesh Balance of Payments—Performance Relative to Seventh Plan Projections, FY15 to FY20

(In millions of US$ or otherwise indicated)							
Items	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**	**Average (FY16-FY20)**
	Actual	Projection					
Trade balance (Projections)	-9917	-11615.1	-12983.6	-14693.1	-16489.8	-18670.5	-14890.4
Trade Balance (Actual)		-6460	-9472	-18258	-15494		
Export f.o.b.(including EPZ) (Projections)	30768	33785.1	37501.4	42001.6	47461.8	54106.4	42971.3
Export f.o.b.(including EPZ) (Actual)		34241.82	34835	36660.4	40530		
Import f.o.b (including EPZ) (Projections)	-40685	-45400.2	-50485.0	-56694.7	-63951.6	-72776.9	-57861.7
Import f.o.b (including EPZ) (Actual)		39901	43491	56440	59914.7		
Services (Projections)	-4628	-5436.8	-6062.0	-6789.5	-7672.1	-8746.2	-6941.3
Services (Actual)		-2708	-3284	-4574	-3715		
Income (Projections)	-2995	-3421.0	-4313.1	-5294.4	-6373.9	-7561.2	-5392.7
Income (Actual)		-1915	-2007	-2392	-2930		
Current transfers (Projections)	15895	17945.6	19878.5	21936.4	24185.0	26693.5	22127.8
Current transders (Actual)		15345	13283	15444	16885		
Current Account Balance (Projections)	-1645	-2527.3	-3480.2	-4840.6	-6350.7	-8284.4	-5096.6
Current Account Balance (Actual)		4262	-1480	-9780	-5254		
Financial and Capital Account (Projections)	5641	6323.1	8092.6	9985.2	11810.0	14603.0	10162.8
Financial and Capital Account (Actual)		1408	4493	9368	5861		
Sources: Bangladesh Bank and Seventh Plan Projections							

Sources: Bangladesh Bank and Seventh Plan Projections

4. Developments in The Fiscal Sector

Bangladesh generally has a solid track record of prudent fiscal management and fiscal policy has served as the anchor for continued macroeconomic stability. With fiscal deficits mostly limited to below the budget targets of 5% of GDP, both government borrowing from the banking system and accumulation of public debt has been moderate and debt sustainability was never an issue. However, the chronic low level of domestic resource mobilization (DRM), coupled with growing pressured for higher spending in line with government's socio-economic agenda for a middle income country is creating pressures in fiscal management in recent years. Financing the government's ongoing major infrastructure programmes, fulfilling the expenditure requirements for education, health and social protection are becoming increasingly challenging given the growing shortfalls in DRM targets set in annual budgets.

This section provides a comprehensive analysis of recent fiscal developments by examining developments in DRM, key components of public expenditure, overall fiscal deficits and its financing, and public debt management and debt sustainability.

4.1 Revenue Trends

Historically, tax resource mobilization in Bangladesh has been far behind advances made in most countries at a similar stage of economic and social development. Unsurprisingly, this below-par resource mobilization has impeded both economic growth and social development. Until recently (FY18), the contribution of tax revenue in Bangladesh to its GDP has averaged about 9.2 percent (Table 12).

Table 12: Tax Effort in South Asian Countries, 2015–2018 (% of GDP)

Countries	FY15	FY16	FY17	FY18	Average tax revenue	Average income tax	Average value added tax	Average GDP per Capita US$
Bangladesh	9.4	9.0	9.1	9.3	9.2	3.1	3.86	1,528.1
India	19.9	20.2	19.8	20.6	20.1	6.4	10.7	1,862.9
Nepal	20.8	23.3	24.4	25.5	23.5	6.8	5.9	824.9
Pakistan	14.5	15.5	15.5	15.3	15.2	4.2	6.3	1,491.5
Sri Lanka	13.3	14.2	13.8	13.5	13.7	2.2	2.7	3,960.1

Sources: IMF World Economic Outlook, Reserve Bank of India, State Bank of Pakistan, Central Bank of Sri Lanka, and Nepal Rashtra Bank

As Table 13 (below) shows, gains in public resources over time have been very modest. Total revenue in relation to GDP increased by more than 2 percentage points, from 9.4 percent during FY00¬–03, but remained very low at 11.6 percent of GDP during the period FY14–17. The increase was solely because of a rise in tax revenue from both personal and corporate sources, while non-tax revenue in relation to GDP declined modestly. The VAT also increased by one percentage point to 3.4 percent of GDP during FY14–17. Additionally, there was a marked shift in the sources of revenue as reliance on trade-based taxes continued to decline, with the focus shifting more toward domestic taxes and away from import-based sources. This is borne out in the fact that the share of trade taxes in total revenue declined to 23 percent, at 2.67 percent of GDP during FY14–17.

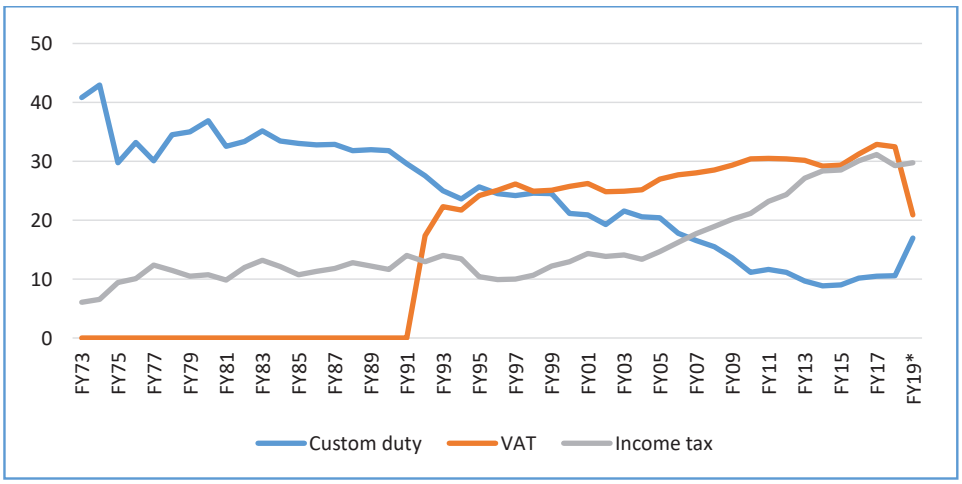
Table 13: Evolution of Public Resources, 2000–2017

	In relation to GDP (%)		*In relation to total revenue (%)*	
	2000–2002	*2014–2017*	*2000–2002*	*2014–2017*
	Mean	*Mean*	*Mean*	*Mean*
Total revenue	9.44	11.66	100.00	100.00
Tax revenue	7.47	9.99	79.30	85.88
Income tax revenue	1.30	3.28	13.75	28.22
Personal income tax	0.56	1.09	42.99	33.57
Corporate income tax	0.74	2.02	57.01	60.98
Value added tax (VAT)	2.41	3.41	25.62	29.32
Trade taxes	3.76	2.67	39.96	23.11

Sources: Ministry of Finance and the National Board of Revenue (NBR).

Over the years, a number of efforts were made to strengthen tax revenue mobilization and improve the country's tax structure. In 1991, Bangladesh embarked on a major tax reform initiative by introducing the VAT system. Simultaneously, significant reduction of import tariffs occurred. Prior to these reforms, trade-based taxes dominated the tax structure in Bangladesh, with customs duties alone accounting for about a third of tax revenue during the first two decades of Bangladesh's fiscal history (Figure 10). Following the introduction of the VAT in 1991, the share of VAT revenue increased substantially, growing to 29 percent in the decade 2004–14, while the share of customs duties declined to 10.8 percent during this same time frame.

Figure 10: Major Tax Components as % of Total Tax Revenue



*VAT in FY 2019 is up to January 2019

Source: National Board of Revenue

Revenue lost from trade-based taxes was compensated through the expansion of VAT coverage to many services, as well as to the wholesale and retail levels. Although the base of the VAT system has been expanded, however, because of political expediency numerous distortions have crept in over time. Because of these problems, the VAT system started to underperform considerably, given its potential.

It is evident that a narrow tax base, widespread exemptions, and administrative inefficiencies are the main factors driving the low tax-to-GDP ratio in Bangladesh, compared to its comparator countries. These factors also imply that tax efforts over the last decade could not bring about significant changes in Bangladesh's tax efficiency and productivity (Table 14).[1] To estimate a country's tax efforts, this paper relied on the stochastic frontier tax analysis, using panel data and taking into account country-specific demographic, economic, and institutional characteristics that may change over time. The paper uses a relative method to predict tax efforts, analyzing and comparing data along the lines of Ricardo Fenochietto and Carola Pessino (IMF Working Paper No. WP/13/244 2013).

The method determines if a country's tax capacity is high or low in comparison with the tax capacity of other countries. The stochastic frontier tax function is an extension of the regression model, which is based on the premise that a production function represents the maximum level of tax revenue that a country can achieve against a set of inputs, such as GDP per capita, inflation, and level of education. The stochastic frontier model of Aigner, Lovell, and Schmidt ("Formulation and Estimation of Stochastic Frontier Production Function Models," *Journal of Econometrics,* Vol. 6, pp. 21–37; 1977) is the standard econometric platform for this analysis.

Table 14: Tax Efforts and Potential for Selected Countries (on Average, 2001–2016)

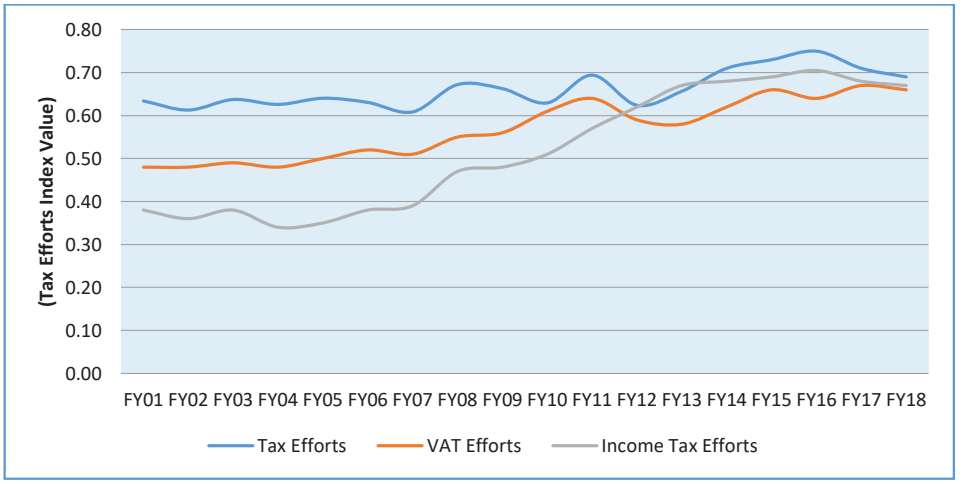
Country	Tax revenue to GDP	Tax efforts	Potential tax to GDP
Bangladesh	7.3	0.58	12.5
India	16.2	0.68	23.9
Pakistan	10.3	0.55	18.6
Sri Lanka	12.3	0.59	20.8
Nepal	12.0	0.62	19.4
South Korea	18.3	0.67	27.4
Philippines	13.7	0.55	24.9
Bhutan	13.7	0.58	23.6
China	17.6	0.71	24.8
Côte d' Ivoire	15.0	0.48	31.3
Ghana	10.0	0.58	17.2
Indonesia	12.0	0.52	23.0
Kenya	16.6	0.73	22.7
Malaysia	14.9	0.54	27.7
Thailand	16.8	0.64	26.3
Tanzania	11.4	0.54	21.2
Vietnam	17.9	0.72	24.9
Uganda	12.6	0.68	18.6

Source: PRI Staff Estimates

A closer analysis of Bangladesh's tax efforts shows that tax efforts for direct taxes have increased over the period under consideration, while indirect taxes have slowed (Figure 11). The improvement in direct tax effort has somewhat offset the deterioration of indirect tax effort, and therefore the overall tax effort has increased modestly in Bangladesh in this time frame.

1 Tax effort measures the ratio of actual tax collection as a share of GDP to potential tax collection as a share of GDP. The potential collection, or taxable capacity, is the predicted tax-to-GDP ratio that can be estimated with a cross-country regression, taking into account a country's specific macroeconomic, demographic, and institutional features.

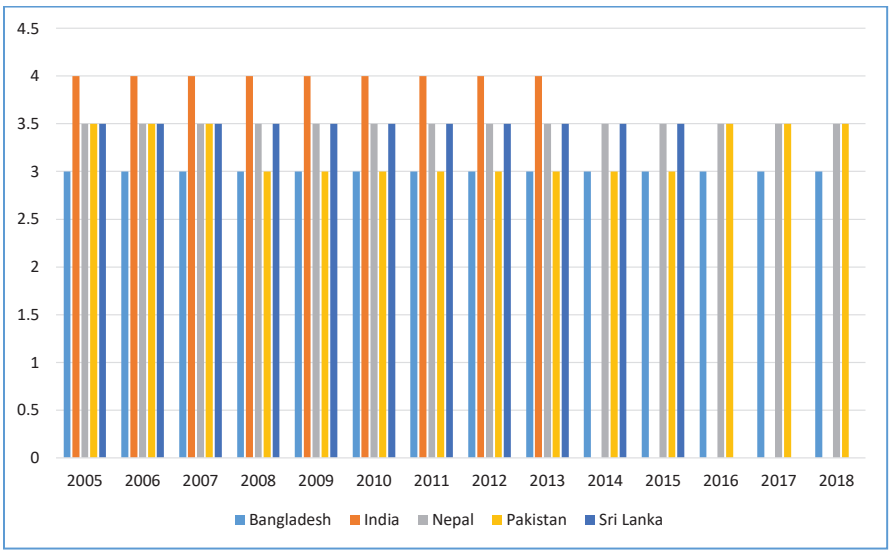
Figure 11: Trends in Tax Efforts in Bangladesh



Source: PRI staff estimates

Despite the marginal improvement, however, tax effort indices for both direct and indirect taxes are quite low, implying that Bangladesh has substantial untapped potential for raising revenue collection from both categories of taxes. Another major drawback of Bangladesh's tax system is its inefficiency, especially in tax administration. Figure 12 (below) shows that Bangladesh and Pakistan both have one of the lowest efficiency scores among the South Asian countries compared. Furthermore, no improvement was shown between 2009 and 2017.

Figure 12: Cross-Country, Country Policy, and Institutional Assessment (CPIA) Efficiency of Revenue Mobilization Rating (1=low to 6=high)



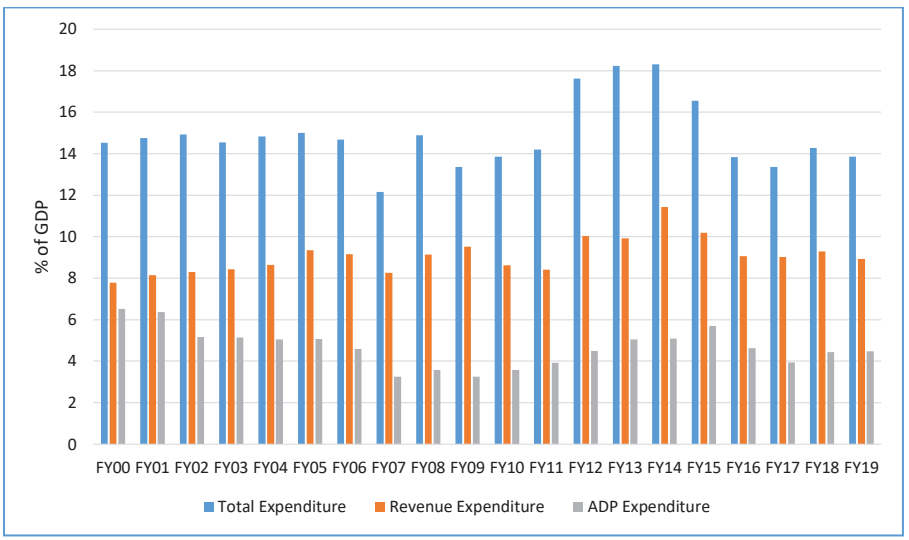
Source: World Bank Databank
*Data for India was unavailable from 2014 onward

4.2 Expenditure Trends

As previously noted, the size of Bangladesh's government is relatively small, ranging from between 12 percent to 18 percent of GDP during the study period. Despite repeated efforts by all government sectors in Bangladesh to increase government expenditure-to-GDP ratio, the ratio never has exceeded 18 percent of GDP, however, and has generally remained within the 14 percent to 15 percent range. Budgetary expenditures in relation to GDP have risen and fallen significantly over the period studied, indicating that Bangladesh has faced a severe challenge over the years in containing government expenditure pressures. The country's expenditure structure, nevertheless, has evolved steadily, in line with the changing priorities of the Bangladeshi government.

Total recurrent expenditures always constituted more than half of total government expenditures in Bangladesh, even reaching a peak of 72 percent of total government expenditure in 2009—about 60 percent of total government expenditure. A similar trend is clear when considering total recurrent expenditures as a percentage of Bangladesh's GDP. For the decade FY99–08, total recurrent expenditures stood at 8.5 percent of GDP, which, on average, increased by almost one percentage point to 9.4 percent during FY09–17. On the positive side, since FY09 the share of recurrent expenditures has been declining, while the share of ADP, comprising investment projects funded through the budget, has increased (see Figure 13).

Figure 13: Total Expenditure and Major Expenditure Components (as % of GDP)



Source: Ministry of Finance

As Table 15 shows, there has not been any major shift in most of the components of expenditures over time. Outlays on compensation of employees declined modestly in relation to GDP, while outlays on goods and services increased somewhat when compared to the averages for these outlays in relation to GDP between 2000–03 and 2014–17. Marked increases are apparent in two areas: (i) in interest payments, which increased from 1.59 percent of GDP in 2000–02 to 1.96 percent of GDP during 2014–17; and (ii) in social benefits, which increased by 1.35 percentage points to 3.49 percent of GDP during 2014–17.

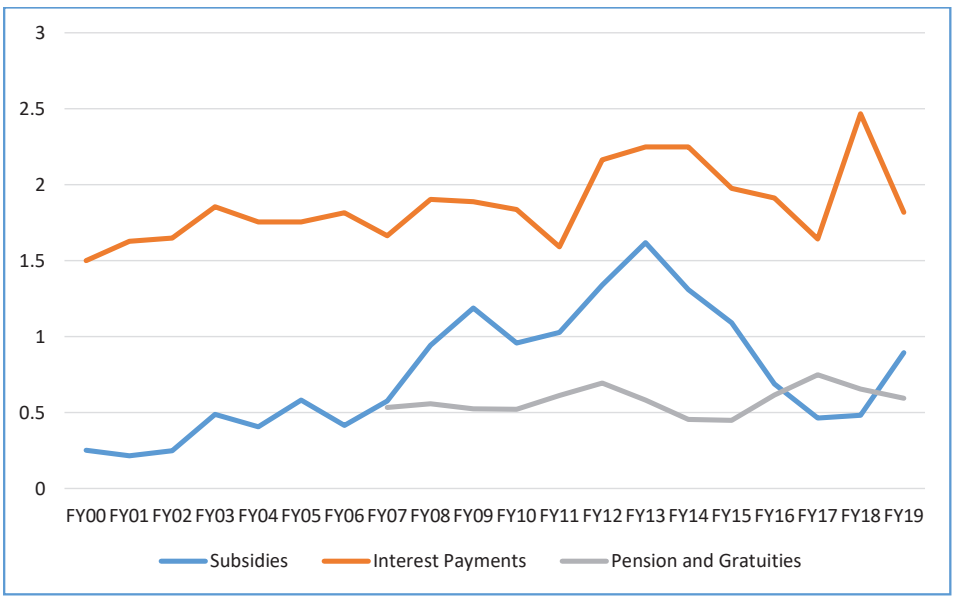
Table 15: Trends in Major Components of Recurrent and Capital Outlays in Bangladesh

	In relation to GDP (%)		In relation to total expenditure (%)	
	2000–2002	*2014–2017*	*2000–2002*	*2014–2017*
	Mean	*Mean*	*Mean*	*Mean*
Outlays on goods and services	1.14	1.20	7.73	7.58
Compensation of employees	2.43	2.31	16.47	14.74
Interest payments	1.59	1.96	10.81	12.32
Social benefits	2.14	3.49	14.50	22.09
Capital expenditures + Annual Development Programme (ADP)	6.43	5.45	43.68	34.32

Source: Estimates based on Ministry of Finance data.

Notwithstanding these developments, if developments in the worrisome areas of interest payments, subsidies, and pensions and gratuities are observed, it appears that all three components are largely within reasonable and sustainable ranges throughout the review period. This is true despite some ups and downs and has helped contain the growth of total recurrent expenditures (see Figure 14).

Figure 14: Selected Components of Recurrent Expenditures

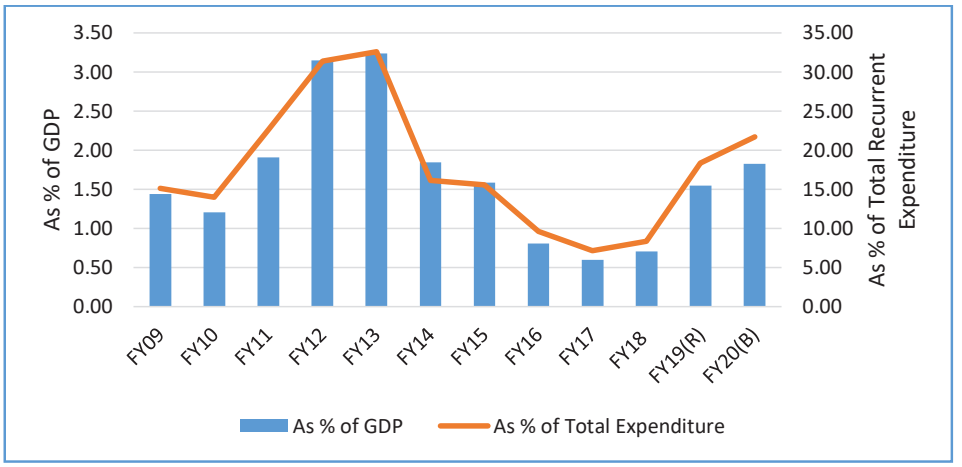


Source: Ministry of Finance

The subsidy bill of the government is one of the most volatile components of the budget, fluctuating from a low of 1.4 percent of total budget size (0.2 percent of GDP) in FY00 to a high of 9 percent of the budget (1.5 percent of GDP) in FY13. After remaining quite stable at less than 0.5 percent of GDP, the subsidy bill of the government started increasing in FY06 and peaked in FY13, reaching a level of 3.6 percent of GDP and accounting for 37.6 percent of recurrent expenditures.

Developments in the subsidy bill over the years indicate that certain pressures are emerging, due to external shocks to the economy and domestic policy considerations. The increase in the subsidy bill during FY06–08 was primarily because of (i) the global commodity price shock, with world prices for rice and petroleum products reaching historically high levels in the international market; and (ii) the domestic supply shock resulting from cyclone and floods, which hit Bangladesh in those two years. As the subsidy bill started to decrease, the newly elected government of that time (beginning FY10) embarked on an ambitious power sector expansion plan. This was launched on an emergency basis in order to overcome power shortages and was implemented by establishing rental power plants with high generation costs. This, in turn, contributed to a surge in subsidy payments during FY10–13. The increased cost of power was passed on to consumers in phases during the following years, contributing to a significant lowering of the subsidy bill by FY16 (see Figure 15).

Figure 15: Total Cash Loans, Subsidies, and Incentives



Source: Ministry of Finance

The trend of the main subsidy components shows that the government has tried to direct increased assistance each year to the sector that required it the most by absorbing higher costs in the form of subsidies. In FY13, a rise in fuel prices in the international market created upward pressure on domestic fuel prices, and to avoid shocks about 40 percent of the total subsidy was directed to this sector. As global oil prices started decreasing in FY14, the subsidy bill also came down significantly.

4.3 The Annual Development Programmeme (ADP)

Bangladesh's annual development programmeme (ADP) is the portion of its national budget, or total expenditure, that is directed to projects spearheaded by the various line ministries of the government. The ADP covers capital or investment outlays in sectors such as energy and power; water resource management and flood control; and projects to improve major roads and highways, rural roads, waterways, seaports, and airports. It also includes capital spending on social sectors such as health, education, and workforce skill development. About 40 percent to 50 percent of ADP funds come from project loans or grants from bilateral and multilateral institutions and are directed to meet specific development needs of important sectors.

The ADP has been, on average, 5 percent of Bangladesh's GDP during FY99–17, and constitutes approximately one-third of the total government expenditure. The share of ADP in total government expenditure was more than 40 percent at the beginning of the new millennium, and then steadily declined to very low levels ranging from between 26 percent to 29 percent during FY07–10. It then started to increase steadily in recent years, spiking again in recent years to about 40 percent of the government's total expenditure.

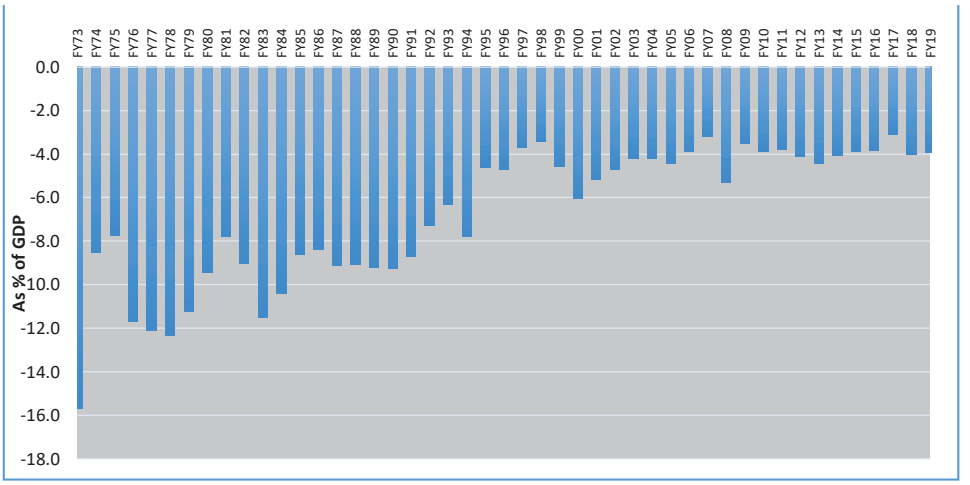
In recent years, the major focus of ADP has been on six sectors—agriculture, electricity, energy and minerals, education, health, and transportation. During FY09–FY11, the education sector was given priority over all other sectors, followed by transportation. While this was a healthy indication of the social development goals of the presiding government, it shifted momentum away from the equally important power sector.

Lack of sufficient power has been a major problem for the manufacturing sector of Bangladesh, and therefore a reduction in development funding for this sector did not bode well for the economic health of the country. Complaints from the business community were heard by the government, however, and it responded by providing the power sector with the highest allocation of ADP in FY12 and FY13. Thereafter, the government prioritized the transportation sector, including the construction of the self-funded $4 billion Padma Bridge project. Padma Bridge would be a major step in infrastructure development, as it connected the northern and southern parts of the country with a standard road system—a great milestone in developing the southern regions of Bangladesh. Altogether more than 10 mega projects, including the $13 billion Ruppur nuclear project, the $7 billion Matarbari deep seaport, and the Karnaphuli tunnel, are currently under construction.

4.4 Fiscal Deficit and Financing

Until the mid-1990s the overall fiscal deficit was on the high side, ranging from between 8 percent to 12 percent of the country's GDP most years. In those initial years, Bangladesh received much higher external financing in the form of grants and loans, allowing the government to maintain high levels of fiscal deficit (excluding foreign grants) without any significant reliance on domestic borrowing, particularly from the country's own banking system. A look back at this trend shows that the overall fiscal deficit was about 8 percent of GDP almost consistently during FY73–FY94, and that deficit levels also rose to between 11 percent and 12 percent of GDP on several occasions. However, the government since then has managed to contain the overall deficit at levels below 5 percent of GDP, except for one or two outlier years, due to special circumstances. This is a great achievement for a developing country like Bangladesh, which faces political instability, revenue constraints, and recurring natural calamities (see Figure 16).

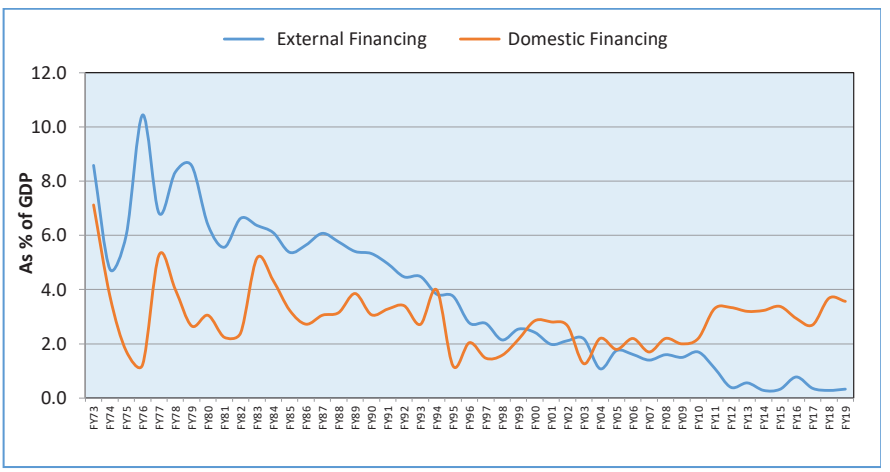
Figure 16: Historical Fiscal Deficit



Source: Ministry of Finance

The financing strategy adopted by the Bangladeshi government entailed using highly concessional external financing from multilateral organizations like the World Bank and the ADB and bilateral sources for the purpose of budget and balance of payments financing. During the first two decades that Bangladesh kept official financial records, the export base was very narrow and was dominated by agricultural products like jute and tea. During these decades, inflow of workers' remittances also was limited. In those early and economically difficult years, the government needed higher levels of external financial support to pay for the imports necessary for maintaining food security and for running the economy. A large part of the support coming from development partners was provided to the government in the form of grants, which enabled the country to continue with large fiscal deficits (excluding grants) without creating macroeconomic instability. At its peak, Bangladesh's reliance on external financing was more than 10 percent of its GDP (see Figure 17).

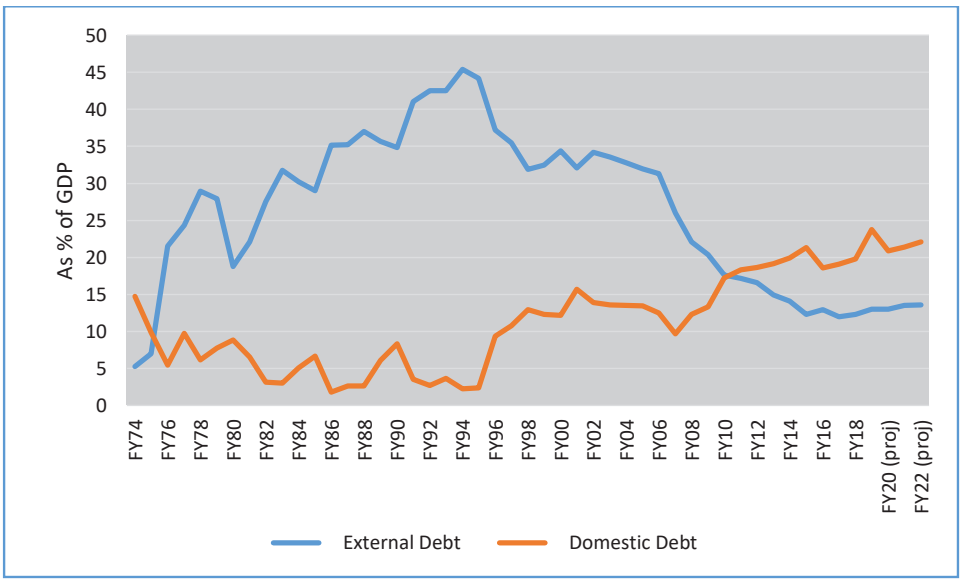
Figure 17: Historical Deficit Financing Trend—External and domestic



Source: Ministry of Finance, Bangladesh Bank

The strategy, however, has shifted since the mid-1990s, as external financing became more difficult to secure in the wake of the collapse of the former Soviet Union and the growing demand for donor support from Eastern European and African countries. Bangladesh's economy also gained strength in the meantime, expanding its RMG-based manufacturing exports and growing its inflows of remittances from Bangladeshi workers abroad. As a result, the economy was in a position to reduce its dependence on external financing and withstand internal pressures arising from higher domestic borrowing, a feat it accomplished by using domestically generated foreign exchange receipts. This shift in financing consequently led to the steady buildup of domestic debt since mid-1990s and the resulting increase in interest payments on domestic debt (see Figures 18 and 19; see also Figure 20 for interest on foreign debt).

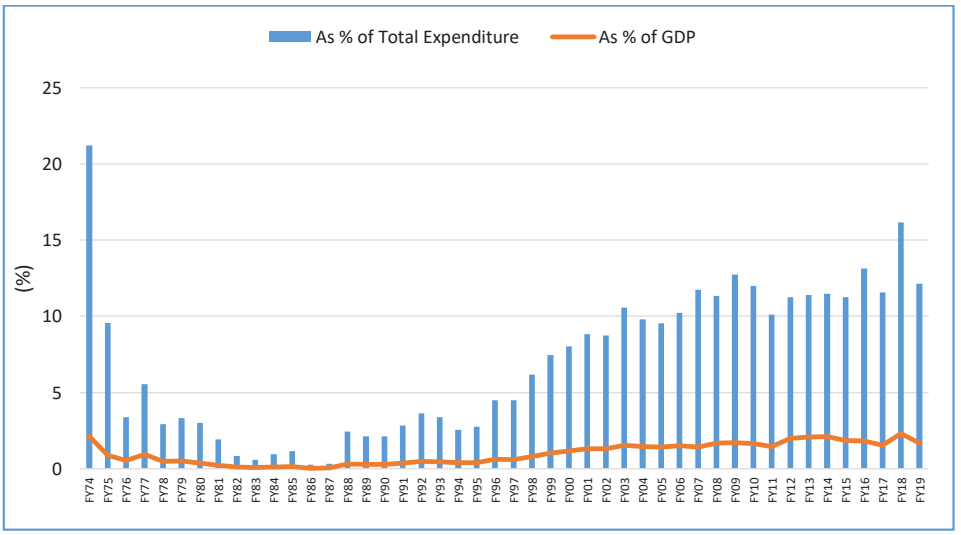
Figure 18: External and Domestic Public Debt



Source: Ministry of Finance, Bangladesh Bank

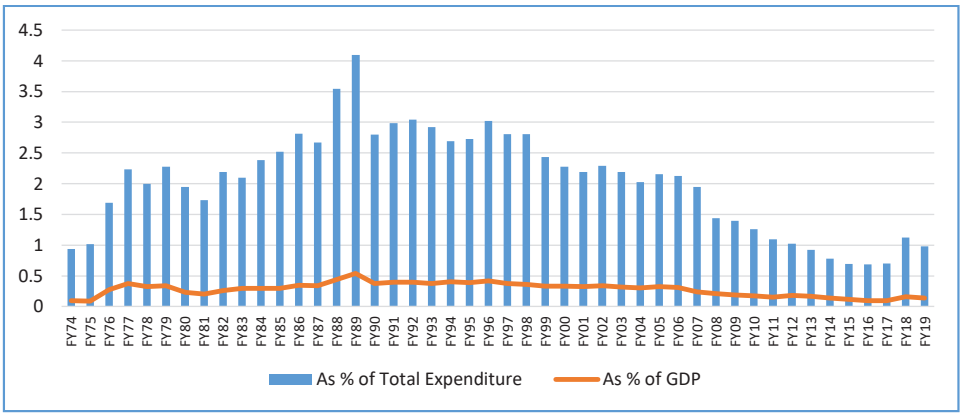
Interest payments constituted 1.8 percent of the country's GDP and 20.4 percent of total expenditure during the period FY99–17. During this period, external financing accounted for more than one-third of the country's budget deficit financing, and rose to 37.1 percent in 2018, from 24.4 percent in 2017. On the other hand, domestic financing is primarily done through bank and non-bank borrowing, the latter being at very high interest rates, which in turn contributes to the rapid buildup of interest payments on domestic debt.

Figure 19: Interest on Domestic Debt



Source: Bangladesh Bank

Figure 20: Interest on Foreign Debt



Source: Bangladesh Bank

5. Financial and External Sector Developments and Management

5.1 Banking Sector

No systematic reform was undertaken in the last one decade with regard to the banking sector. Following the significant gains made through earlier reforms—the benefits of which could be seen up to 2011—the performance of the banking sector continued to deteriorate over the years. In the absence of proactive measures to discourage the culture of loan default and prevent large scale fraud, performance of both the state-owned and private commercial banks started to deteriorate rapidly. The policy statements made by the government in the Sixth and Seventh Five Year Plans with regard to the banking sector were not transformed into actionable reform initiatives.

Repeated efforts by the World Bank to assist the government in undertaking structural reforms to reverse the deteriorating banking sector did not receive favorable response from the authorities and the plans had to be postponed or shelved until such time when there will be willingness on the part of the government to tackle the banking sector issues seriously. Some banks are already under stress and surviving only with government and regulatory support. Very high loan concentration to some large firms/families and concentration of ownership of banks and NBFIs by a few families are also major problems, making the banking system vulnerable to shocks and abuses. Recently several banks became illiquid and the banking system experienced liquidity crisis, which could be overcome only after the easing of the macro-prudential conditions like the CRR and special equity contributions by public financial institutions. If left unattended for long, the banking sector may experience a more serious and a full-blown crisis.

5.2 Stock Market

The capital market is in a fragile state, characterized by excessive volatility in terms of movements in the overall stock market price index and turnover volume, leading to repeated episodes of booms and busts. In the stock market crash of December 2010, the Dhaka Stock Exchange (DSE) index lost 50% of its vale after reaching an all-time high. A high-level probe committee set up by the government in 2011 following the market collapse found major weakness in: (i) regulatory enforcement and oversight by the Securities and Exchange Commission (SEC); (ii) lax and excessive reliance on margin lending requirements; (iii) unreliable financial reporting standards of listed companies, (iv) weak coordination across financial regulators; and (v) commercial banks' excessive investment in the stock markets. From a macroeconomic perspective, loose monetary policy stance and the consequent injection of liquidity into the asset markets helped accelerate the expansion of bubble at an unsustainable pace, making the massive correction inevitable. Investor confidence remained very weak in the aftermath of market collapse resulting in low demand for equities.

Against this background, the government undertook a new round of capital market development programmeme –CMDPII--with support from the ADB. **The major objectives of CMDP II were to:**

(i) strengthen market stability by enhancing the role and capacity of the Bangladesh Securities and Exchange Commission (BSEC);

(ii) enhance market facilitation by developing a long-term vision for capital markets, upgrading accounting and auditing standards, expediting adjudication of enforcement actions, improving governance of listed companies, and pursuing demutualization of the stock exchanges; and

(iii) incentivize the issuance of equities and bonds, develop liquid capital markets, and catalyze institutional investors.

The first two objectives addressed the reasons behind the crash, and the third aimed at supporting market expansion to finance the investment targets under the Sixth Five-Year Plan, 2011–2015.

In the event, three major factors have undermined the effective operations of the stock market. **First**, despite the reforms undertaken, the overall performance of BSEC has not

been up to the expectation. Irregularities, long and complex IPO process, approval of substandard companies for IPO in recent years, inadequate and lack of timely surveillance leading to questionable movement of stock prices have raised serious governance issues regarding the stock market regulator BSEC. No good national and international companies have listed in the stock exchanges after the listing of Grameen Phone. **Second**, economic fundamentals have also weakened over time, particularly for the major sectors like banking and other financial sectors, textiles, and many others. Profitability of institutions in these sectors have gone down with consequent negative impact on stock prices. Foreign investors are also cashing out and staying in the sideline in anticipation of a major depreciation of Bangladesh Taka which iis perceived by the market as overvalued and the recent sharp widening of the parallel market exchange rate also points to market expectation. Because the decline in stock prices were also coupled with lower profitability of listed companies, the P/E ratio for the market still remains quite reasonable despite the fall in the price indices. Third, the market also suffered from shortage of liquidity as a result of liquidity crisis I the banking system. Recently Bangladesh Bank has introduced a special rediscount window for every bank to borrow up to Tk. 2 billion from the central bank at a subsidized interest rate for on-lending to institutional investors in the stock market.

5.3 Insurance Sector

No major interventions have been planned for the insurance sector except for the limited reforms undertaken in the context of CMDP II.

5.4 Bond Market

The government recognized the importance of bond market, it but could not develop a coherent and comprehensive strategy for its development. In the absence of such a strategy, because of the built-in structural issues discussed above, the bond market continued to suffer from two major considerations and developments:

- First, the objective of the debt management wing of MOF was to keep yields on tradable bonds (Treasury bills and Treasury bond) low with a view to minimize debt servicing costs. This policy has been pursued by managing the cut-off yields and forced divestment of bonds to primary dealers.
- Second, arbitrarily fixed interest rates (often at very high rates) on the non-tradable bonds issued by the National Savings Directorate (NSD) of the MOF. Since the rates on these instruments, which are risk free, are fixed at arbitrarily high levels, the process distorts the bond and money market.

The government is aware that a significant cut in the NSD interest rates will contribute to a slower growth in NSD investment and a corresponding diversion of funds to the banking system will ease pressure on banks' liquidity and profitability, thereby allowing them to expand their asset base faster. But it is currently unable to cut the NSD rates due political economy issues.

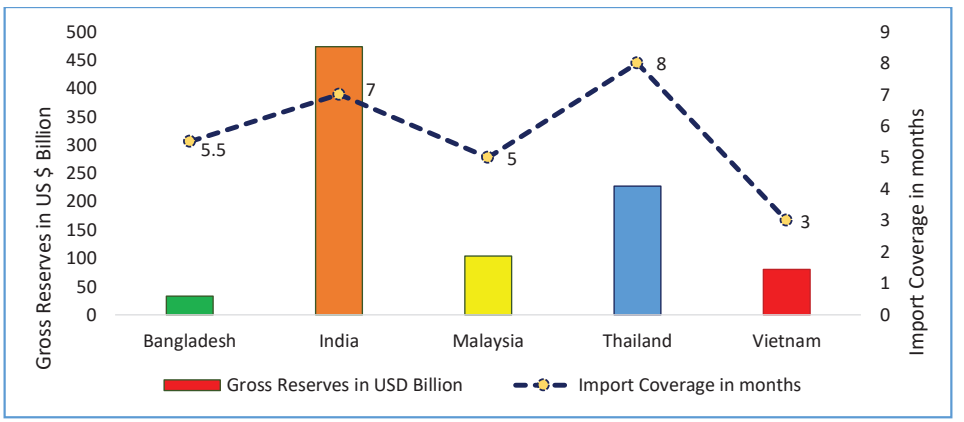
6. Macroeconomic, Political and Institutional Constraints to Improving Financial, Fiscal and Monetary/Exchange Rate Policies

6.1 Constraints to Improved Financial Sector Performance

There are tensions in the domestic money market in terms of tightening liquidity in the banking system and supply of foreign exchange in the interbank foreign exchange market is also getting tighter due to continued weakness of the balance of payments (BOP) in recent years. The external current account balance (CAB) has improved somewhat in FY19 compared with the last year, but it is still registering deficits and BB's gross official reserves have not increased or continued to decline in nominal terms at a moderate pace. According to revised BB figures, the CAB in FY18 was an all-time-record deficit of US$ 9.78 billion. The condition got slightly better for the CAB in FY19, although it still recorded a deficit of US$ 5.25 billion in FY19.

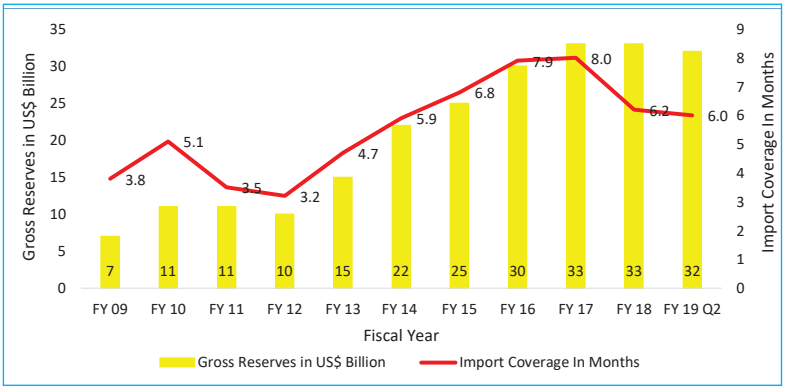
The weakening of the BOP has contributed to exchange market instability. BB has been trying to stabilize the exchange rate by intervening in the foreign currency market by selling about US$ 2.5 billion in FY19. However, it is not possible for BB to intervene indefinitely. Moreover, some banks are refusing to open LCs on behalf of their clients due to shortage of foreign exchange in the interbank market at the BB dictated rates. In the last 4 years, the gross official reserve did not increase in dollar terms whereas there has been a significant increase in imports. Thus, the reserve coverage for import payments has fallen significantly and likely to fall further. At 6 months of reserve coverage as of end-FY19, the level of reserves was still comfortable and compared well relative to its comparators (Figure 21). However, since it declined by two months (from 8 months to 6 months within a period of 15 months, Figure 22) and this kind of rapid fall cannot continue for long, market-based flexible exchange rate management is the way forward.

Figure 21: Gross Reserves and Import Coverage of Bangladesh and Some Other Asian Countries



Source: Bangladesh Bank, CIEC and World Bank

Figure 22: Bangladesh's Gross Reserves and Import Coverage from FY 09 to FY 19

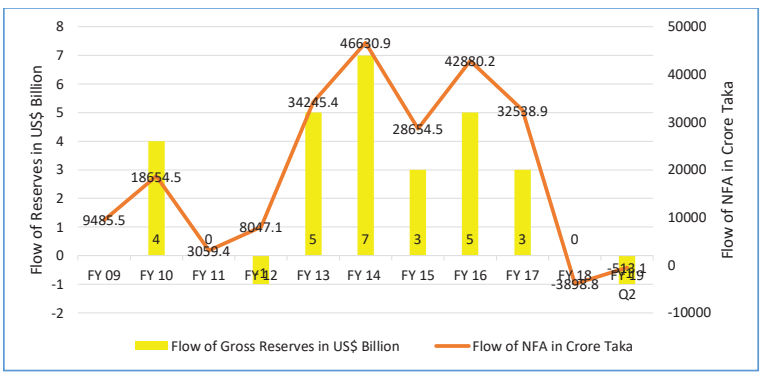


Source: Bangladesh Bank

BB's credit and Interest rate policies should not be viewed independently from the ongoing tightening of liquidity in the banking system. This liquidity problem has pushed up the interest rate structure of the banks in 2018, and this did not happen overnight. The problem over liquidity in the banking system has been intensifying over the last several years due to a number of factors:

(i) One major source of liquidity for the banking sector is the inflow of Net Foreign Assets (NFA) though the BoP. During the period from 2012 to 2016, large current account surpluses and finance account surpluses contributed to a sharp increase in the overall surplus of the BOP and the corresponding build up in foreign exchange reserves of BB (Figure 23). The resulting expansion of the NFA was a major source of liquidity injection into the banking system in those years. Simply put, for every US$ of increase in the NFA, domestic liquidity/broad money expanded by about Taka 80. Accordingly, the large surplus positions in the NFA amounting billions of US dollars every year contributed to the corresponding 80-fold increase in the amount of liquidity in the banking system in terms of Taka. As the BOP weakened since FY18 and became negative, a large amount of liquidity has been drained out of the banking system.

Figure 23: Flow of Gross Reserves and NFA from FY09 to Q2 of FY FY19



Source: Bangladesh Bank

(ii) The other major source of monetary expansion in the banks has been the deposit growth of households/account holders out of their financial savings. As the households were attracted by the higher interest rates of the National Savings Directorate (NSD) instruments, a large part of the financial savings moved away from the banking system into the non-bank and non-tradable instruments like the ones issued by the NSD (Table 16).

Table 16: Outstanding NSD Certificates Over the Last Few Years

Period	Stock of Outstanding NSD (in billion Taka)	Flow of Outstanding NSD (in billion Taka)
2014-15	1,050.7	_
2015-16	1,387.6	336.9
2016-17	1,911.8	524.2
2017-18	2,377.7	465.9
2018-19	2,877.1	499.4

Source: Bangladesh Bank Quarterly

(iii) In addition, the sizeable intervention in the foreign exchange market by BB also reduced liquidity in the banking system. For every US$ that BB sold, it effectively withdrew Taka 80 from the banking system, thereby contributing to further tightening of liquidity in the banking system.

(iv) Finally, many banks were engaged, particularly the new ones, in excessive lending beyond the limits established through macroprudential conditions imposed by BB. In some cases, banks' loans to deposits ratio exceeded even 100%, violating BB's requirement limiting lending to a maximum of 84% of deposits. As BB started to enforce this regulatory requirement, which it should have done even earlier, many banks had to stop lending and even had to recall some of their earlier loan commitments. This resulted in the tightening of lending in general, pushing up the interest rate structure in early 2018. BB's intervention should not be blamed for this increase, which some quarters do. The problem lies with the liquidity situation and aggressive lending by certain banks violating macro-prudential conditions.

Against this background, the deposit growth rate in the banking system slowed down from a healthy rate of about 20% to less than 10% in FY19 (Figure 24). Banks started to compete for funds, and they had no option but to offer rates to depositors which were close to the NSD's rates, leading to a sharp increase in deposit rates across the whole banking system. Given the average spread in lending and deposit rates of about 4.5%, the lending rate also increased significantly.

Figure 24: Growth Rate of Deposits (%)

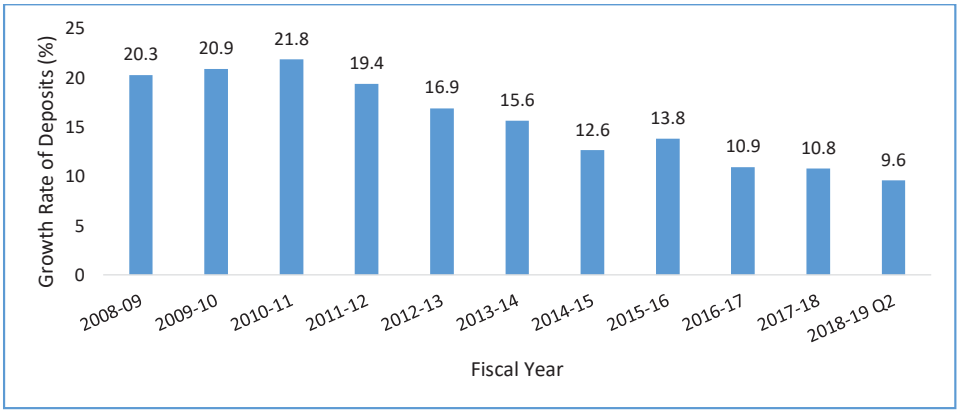
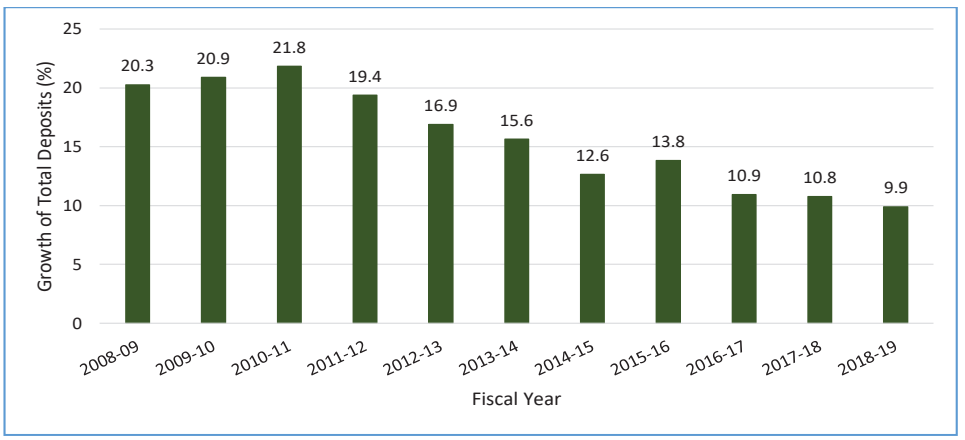


Figure 25: Trend in the Growth of Total Deposits with DMBs from FY09 to FY19 (%)



Source: Bangladesh Bank Monthly Economic Trends

Given the slower deposit growth, banks were also not able to expand private sector credit as per the MPS of BB. In FY 20, the target was 15.5% but the achievement so far is 9.8%. As the deposit growth is still subdued or even decelerating further, the banks' ability to expand credit has been correspondingly limited.

6.2 Institutional Constraints to Domestic Resource Mobilization (DRM)

Based on the developments in revenue mobilization, it appears that Bangladesh's tax system suffers from serious deficiencies in both the tax policy and tax administration fronts. In the 48 years since its independence, only in the early 1990s did the country attempt reforms in this area. These reforms were implemented through (i) introducing the VAT Act of 1991, with support from the IMF and the United Nations Development Partnership (UNDP); and (ii) completing, in part, reforms of the import duty and tariff structure. In the latter reform, the maximum customs duty rate was reduced to 25 percent from much higher rates, and the number of duty slabs was reduced to six slabs—0 percent or exempt; 3 percent; 5 percent; 10 percent; 15 percent; and the maximum 25 percent. The logic of the structure was based

on World Bank-supported trade reform initiatives. These twin reforms also furthered shifts in the country's overall tax structure, lessening its dependence on customs duties and increasing its reliance on domestic-based taxes like direct taxes and the VAT. The tax-to-GDP ratio also improved in the 1990s, despite a significant reduction in Bangladesh's reliance on trade-based taxes through tariffs.

Gains in VAT revenue collection could not be sustained beyond one decade in the absence of supporting reforms and in the presence of distortions created over time. As part of the VAT overhaul, the VAT system was expanded in the late 1990s from its original role in imports and manufacturing to selected wholesale and retail sectors. This expansion was met with substantial resistance from various trade and industrial associations, such as the Retail Shop Owners' Association, the Jewelry Association, the Sweet and Pastry Shop Owners' Association, and many other retail organizations that were mostly outside the VAT network. As part of a political compromise, the government agreed to adopt a mixed system with lower effective tax rates (using what they called a truncated tax base), or fixed annual amounts for shops that met certain criteria. This latter option, called the "package VAT," was based on a sliding scale, with different amounts set for different locations. Some key sectors, like construction, steel rerolling mills, and jewelry industries, were brought under the truncated VAT system, with various effective lower tax rates. Introducing these distortionary measures, however, did not yield any positive results, and tax collection rates at the retail and wholesale levels remained very low. Additionally, many of the promises made by various trade organizations proved empty when it came to tax compliance. At the time of negotiations, these organizations made commitments to the government that they would collect hundreds of billions of taka in additional revenue from the package VAT, but in reality tax compliance was so poor that total collection did not exceed even Tk. 0.3 billion in any of the following years.

Customs tariffs initiated in 1990s also could not be sustained, and in part reversed in the following two decades. The Bangladeshi government's efforts to rationalize the customs tariff structure, with a view to boosting the economy, also was sabotaged in the last decade from domestic manufacturers seeking higher degrees of protection. The tariff was implemented primarily by introducing para-tariffs, such as regulatory duties, on a range of imports at 5 percent, and by applying supplementary duties only on imported goods. Supplementary duties were primarily imposed on imports, and in many instances, the supplementary duty rates were so prohibitive, they virtually eliminated possibilities for imports.

Direct tax rates are high in Bangladesh, but the revenue collection level is very low, pointing to poor tax efficiency in direct tax administration. As previously noted, Bangladesh has one of the highest corporate and personal income tax rates in the region and also globally. The maximum corporate tax rate is 35 percent for companies not listed on the stock exchange, and 25 percent for the 300-plus companies listed on the Dhaka and Chittagong stock exchanges. Some sectors, like banking, telecommunications, and tobacco, are taxed at even higher rates, such as 40 percent for banks, and 45 percent for telecommunications companies and the tobacco industry. Much of the corporate income tax is collected from these three sectors, which are mostly publicly listed. However, tax collection from non-listed companies, which compose the overwhelming majority of companies in Bangladesh, has been very modest, due to improper accounting, tax exemptions and holidays, and collusion with tax officials.

On the personal income tax side, Bangladesh suffers from a very low tax base, a high tax rate, and a very weak tax administration system. As noted at outset of this paper, personal income tax rates in Bangladesh are quite high, with a maximum personal income tax rate of 39 percent, which includes a wealth surcharge. Complicating matters, the tax base is very narrow, with about 1.3 million Bangladeshi citizens having taxpayers' identification numbers (TINs), and less than one million (about 0.9 million) actually submitting tax returns. The number of TIN holders in Bangladesh in fact accounts for less than 0.8 percent of the country's population, and the actual number of tax returns submitted is even less, at only 0.5 percent of the population. A generous threshold level and frequent upward adjustments on the exemption level also have hindered personal tax collection efforts. Currently set at Tk. 250,000, the exemption level in Bangladesh is almost 160 percent of per capita income in the country. Although household income has been expanding at a satisfactory pace, the frequent upward adjustments to the exemption level have enabled most Bangladeshi citizens to remain below the tax threshold.

Despite a rapid expansion of the industrial and service sectors, payroll tax collection is very low in Bangladesh. The National Board of Revenue (NBR) has expanded its regime of withholding wage taxes over time, and this accounts for a growing proportion of direct income tax collection in Bangladesh. However, much of the withholdings have been applied to contractors, importers, and even to sales of iron and steel to developers, homeowners, and owners of automobiles—in the case of automobiles even varying according to the size of the vehicle. The income tax law also requires employers to withhold 10 percent of employees' salary as payroll tax and deposit the amount collected every month to the Bangladesh treasury. However, the amount collected is not monitored closely by the NBR or tracked either centrally or locally by tax commissioners. As a result, many employers may not be fulfilling their legally mandated withholding requirement, and in many instances, employees are not filing their personal income tax returns, either.

Key sectors of the economy remain virtually outside the tax net. Revenue collection from both direct and indirect taxes also has been impacted by extensive use of tax benefits offered to key sectors of the economy. These benefits extend to the RMG and energy and power sectors, and also include tax breaks given to firms establishing themselves at export processing zones. Tax holidays offered to industries with different criteria, such as location and modernizing capabilities, further drain revenue.

The RMG sector is, by far, the most dynamic sector in Bangladesh, with gross exports standing at more than 12 percent of the country's GDP—but the sector pays hardly any taxes. The corporate tax rate for RMG is only 12 percent, compared to 35 percent for all other non-listed companies. To make matters worse for revenue collection, even that percent is not paid by most RMG firms, however, and thus the government has imposed a minimum tax of 0.3 percent as a gross turnover tax on RMG export products. This has also been reduced recently as the exporters are facing difficulties and the government is reluctant to depreciate the Taka exchange rate. The energy and power sector is another sector to which the government grants generous VAT, customs, and income tax benefits to encourage private sector investment in power generation. These tax benefits, coupled with generous power purchase guarantee agreements, while lowering overall revenue collection, have, however, worked to attract a large number of domestic and foreign investors to the lucrative power generation and liquefied natural gas terminals in Bangladesh. In some instances, VAT exemptions also are offered to certain emerging industries, like electronics, to promote and protect the domestic electronic sector. While necessary from political

economy ground, the combined cost of these various tax benefits to Bangladesh was estimated by the NBR to be about Tk. 450 billion (2.1 percent of GDP) in FY18.

Tax administration is outdated and cannot keep pace with the rapid expansion of the economy and the expansion of the country's potential tax base. Tax administration in Bangladesh, as noted earlier, is almost entirely manual and paper based. Tax collection is provincial, a vestige of the British colonial administration in the 1940s, and information sharing between the three wings of the NBR—VAT, customs, and direct taxes—is further hampered by the separation of tax cadres into two parts: customs and VAT; and direct tax. Both cadres operate provincially, where all tax-related issues are handled by VAT, customs, and direct tax commissioners working in silos. To quash cooperation even further, past efforts to merge the two cadres have been undermined by strong resistance from the customs and VAT officials, who consider themselves superior to the direct tax officials. The rivalry has seriously undermined domestic revenue mobilization efforts, and measures to streamline the VAT administration, as set forth in the VAT Act of 2012, have been resisted by powerful field officers, who see the measure as usurping their power.

Lack of separation between tax policy formulation and tax administration contributed to a lack of focus and slower reform in both areas. The NBR's aim is to collect taxes across Bangladesh for each of the three tax wings through main administrative units called commissionerates, which are led by senior field-level tax officials called commissioners. In the early part of the new millennium, there was a proposal to separate the tax policy formulation functions from the NBR by establishing a separate division under the Ministry of Finance called the Tax Policy Division.

The proposed Tax Policy Division was supposed to be staffed with tax policy experts from inside and outside the government, who had the exclusive role of continuously reviewing emerging developments and challenges in order to make necessary changes in tax policy. It was intended that they would take into account various issues, like the need for reforms in certain areas of tax policy, and that they would amend relevant tax laws or rules, or even draft new laws and rules in order to bring about fundamental changes. The NBR strongly resisted such a fundamental reform, however, on the grounds that separating tax policy from tax administration would undermine tax efforts and ownership of certain revenue targets. Eventually given its way, the NBR was then allowed to establish separate tax policy departments in all three wings of the NBR, under three newly created positions—VAT member (policy), direct tax member (policy), and customs member (policy). The establishment of three separate tax policy departments in three separate wings of the NBR only further separated policy formulation functions among the three wings. Furthermore, since these senior positions were awarded to high-level tax administrators from the field, this change failed to bring about any measurable advances in tax policy formulation or in related reform strategies.

Deficiencies and incomplete design of reforms, along with half-hearted implementation from development partners under pressure, also contributed to unsuccessful or failed efforts. The NBR has initiated many piecemeal reforms in recent years, such as automating income tax payments, which was done to improve a single process while leaving front- and back- end functions unchanged. Additionally, this did not address any fundamental business processes and only minimally improved the tax payments side with technology upgrades while leaving all other manual processes unchanged. Introducing electronic cash

registers for all sales, in order to track VAT-registered enterprises, was one measure that could have garnered real returns, but the measure failed, due to procurement problems and noncooperation from VAT-registered enterprises.

6.3 Political Constraints to Domestic Resource Mobilization

The political economic environment in Bangladesh has not supported necessary reforms in tax policy and tax administration. Strong political commitment to tax reform is lacking in Bangladesh, and the disconnect between field-level tax officials and tax-evading businesses has further undermined tax reform efforts from both within and outside the NBR. An example of this can be seen in the lack of political commitment to the VAT Act of 2012.

A lack of commitment from high-level policymakers also was reflected in other areas of tax reform. For instance, a new customs act draft was prepared several years ago, with support from the World Bank, and was promptly submitted to the Bangladesh cabinet for approval—to no avail. And though there is a widespread realization that direct tax codes in Bangladesh need reform, due to resistance from the NBR and a lack of political commitment, reforms have ground to a halt. The IMF, the World Bank, and the European Union have been offering technical assistance for reforms on this front, but still there is not much government engagement.

The NBR adopted a modernization plan for itself in 2012, and submitted that to Parliament for feedback. This was a fairly good initiative, was prepared in a cooperative manner with all relevant stakeholders, was supported by the IFC, and had a great degree of ownership by the NBR. With the change in NBR leadership, however, the initiative got shelved and did not reach the implementation stage.

7. Policies Under the 8th Five Year Plan

7.1 On Financial Sector Front

What can BB and the government do in this situation? The authorities must address the fundamentals—not superficially but at the core issues--which contributed to the decline in liquidity. For that to happen the authorities should work on all 3 fronts:

(i) **Improve the Balance of Payments (BOP) by increasing the inflow of NFA.** However, in its own projection BB is stating that the NFA will be negative in the 2nd half of FY19 which is not at all conducive to the monetary management point of view. This is a reflection of the business as usual scenario or unchanged policy setting. What is needed includes proactive exchange rate management and export policy to restore BOP equilibrium with positive growth in gross and net reserves of BB.

(ii) To ensure a healthy growth in bank deposits from the household side, **the spread between NSD interest rates needs to be adjusted with market rates.** This high rates of interests on NSD instruments is not helping the situation and until the rates are brought in line with the market, the banks are going to suffer from slower deposit growth and the consequent tightened liquidity, limiting their capacity to expand credit.

Bangladesh has a history of high interest rates compared to its comparator countries (Table 17).

Table 17: Interest Rates in Bangladesh and other Asian countries

Country	*Deposit Rate*	*Lending Rate*
Bangladesh	5.26%	9.49%
India	3.50%-4.00%	8.95%-9.45%
China	1.50%	4.35%
Vietnam	4.78%	6.25%
Thailand	1.30%	4.47%
Malaysia	3.03%	4.54%

Source: Bangladesh Bank, Trading Economics

This makes our economy inherently less competitive. We need to understand what makes our interest rates high.

(i) If the deposit rate is high, the lending rate will always be correspondingly high, and the higher deposit rate is the result of the government's own policy of giving over-attractive interest rates on NSD instruments. No country in the world provides such high interest rates on government bonds which are non-tradable and risk-free.

(ii) As the spread between lending and deposit rate is high in Bangladesh, which at about 4.5% is considered the highest among comparator countries, the lending rate is correspondingly higher compared with comparators.

(iii) The combined effect of higher deposit rate and higher interest spread, puts Bangladeshi entrepreneurs and exporters at serious disadvantage of 3 to 5 percentage points in financing their investment and business activity. Bangladeshi entrepreneurs will always be at a relative disadvantage in terms of loss of profitability or competitiveness.

Addressing this problem of high spread will require:

(i) A significant reduction in the loan loss provisioning by strengthening the quality of assets of banks. Currently the non-performing assets of the banking system stands at about 11%. Addressing loan loss can help reduce spread by 1-2 percentage points.

(ii) Operating cost is the most important component of any bank in any country. In Bangladesh the operating costs are also high due to proliferation of banks contributing to higher overhead expenses. Reducing the operating cost can also help reduce the spread. This can be achieved through efficiency in administration, automation and containment of overhead costs. Many banks in Bangladesh—particularly smaller ones—has been suffering from large overheads relative to their asset base because of:

- Fixed expenditures which any bank irrespective of asset size must undertake, such as the positions of the senior staff (MD, DMD, SVP, treasury management, internal control, etc.). In a market which suffers from quality staff, the large number of banks has pushed up the remuneration and benefit packages of senior bank staff compared to senior staff of other industries.

- Head office cost is high because most banks' head offices are located in costly commercial parts of Dhaka and irrespective of their asset base. Smaller banks have to incur the high cost of their head offices despite their small asset base.

- Most importantly, the costs of automation and cyber protection, which are hugely increasing due to adoption of modern automated platforms for speedy financial transactions and the threats of cyber-attack. For many banks, these costs have already skyrocketed and those which have not yet undertaken significant automation would need to implement projects to do so with large cost implications. For small banks, such costs may easily inflate their overhead expenditure relative to their asset base.

The only way to contain or reduce or generate savings on these major overheads to levels commensurate with the levels in other countries is to reduce the number of banks by consolidating the banking system through mergers and acquisitions of weaker banks with stronger ones.

(iii) Countries which have lower interest rate structure generally also enjoy lower inflation rate. Bangladesh can reduce the deposit rate if the inflation rate comes down. For example, if the inflation rate is 2.5% (like in China), banks can offer 3% deposit rate, still providing positive real interest rates to depositors (from our current level of 5.5% to 6%). This essentially implies that BB/government should not be complacent about Bangladesh's inflation performance and continue to aim for a lower inflation target.

Challenges in achieving desired levels of private sector lending and market-based interest rates: BB is right in stating its desire to maintain market-based interest rates in its MPS. The statement is essentially reassuring because we consider it as moving away from the often stated policy of fixing the maximum interest rates at 6% and 9% for deposit and lending, respectively. However, for market-based interest rates to come down to a level which will make Bangladesh more competitive and support investment and growth objectives will require much deeper level of policy undertakings along the lines described above.

Banks cannot expand lending without a commensurate growth in deposit base while adhering to macroprudential requirements of BB. If the current anemic deposit growth rate is sustained because of the factors discussed above, there is no way that private sector credit will expand by 16.5% as envisaged in the MPS in support of the government's growth target. Another complicating factor is also emerging. Until FY19, because of much larger (well above the budget targets) borrowing through issuance of NSD instruments, government borrowings (net) from the banking system were negative indicating that the government was repaying the banking system on a net basis. However, this situation has changed and despite continued heavy borrowing from the NSD, the government is also borrowing heavily from the banking system in FY19.

Table 18: Government Borrowing from the Banking System, FY16-FY20 (Jan-20)

Financial Year	Stock of Net Claims on the Government (in Crore Taka)	Flow of Net Claims on the Government (in Crore Taka)
2015-16	114219.6	3962.3
2016-17	97333.5	-16886.1
2017-18	94894.9	-2438.6
2018-19	113273.4	18378.5
2019-2020 Q2	156860.8	43587.4

Source: Bangladesh Bank

This unfavorable turnaround in government borrowing is a matter of concern. The growing recourse to bank financing by the government--despite continued dependence on borrowing through NSD instruments--is attributable to the very weak revenue performance of the NBR. As growth in NBR tax collection substantially slowed down since FY19, the NBR's tax revenue only increased only by less than 7% compared with a target of more than 40% in FY19 and FY20. This huge shortfall in revenue and the consequent government borrowing from the banking system is also crowding out of loanable funds of the banking system by the government to finance budgetary outlays. In this situation, credit expansion to the private sector has already fallen markedly and likely to fall further. Such an outcome—which is currently in the making—will not be conducive to sustaining real economic growth at above 8% rate.

7.2 Observations Related to Recent Capital Market Developments and Policy Recommendations

Government's efforts in the form of ad-hoc measures to stop the decline in the DSE Index did not predictably bring any positive result in the past and will not do so in future. The interventions temporarily push the stock price index upward, but it resumes the declining trend soon thereafter ignoring the bumps. Government interventions alone without addressing the fundamental issues cannot bring stability to the asset market and contribute to sizable financial losses for the public sector financial institutions through which such interventions are meade.

The observed volatilities notwithstanding, there are positive signs which may be characterized as indications of future market stability. Foreign portfolio investment has been increasingly noticeably, attracted by proper valuation, macroeconomic stability and growth potential of the economy. Increasing the number of IPOs of large and financially sound companies and attracting foreign investment will help support the market stability and growth.

In the case of Bangladesh, the reform agenda have largely been identified, and despite some delays much of the reform agenda have been implemented. In particular, the demutualization of stock exchanges to segregate ownership, management and trading rights of members will help convert the two exchanges into commercially and professionally run organizations. Improved governance structure should also help develop the market and attract new investors.

Enhancing supply and demand for equities over time will require restoration of confidence through:

- Upgrading of accounting and auditing standards to enhance market confidence
- The newly established Financial Reporting Council should adopt and monitor the implementation of International Accounting Standards (IAS) and International Standards of Auditing as well as license accountants and auditors
- Establish an Audit Committee to supervise companies' internal controls, accounting policies, and compliance with IAS

The absence of the FRC was seriously undermining the restoration of market confidence through improvements in quality of financial reporting. Now the FRC has come into existence, but it is yet to make any significant impact on the accounting standards of the country.

Developing an organized investor base through a robust mutual fund industry will require going beyond what has been done so far and observe how the sector responds to the steps already taken. Making the playing field even by requiring ICB funds to be fully compliant with all mutual fund regulations will be important in this regard.

Government should continue to issue treasury bills and bonds at market rates and thereby develop a liquid bond market and reliable yield curve. In addition to stopping the policy of devolvement by Bangladesh Bank, which it is addressing now, enhancing market liquidity will require increasing the average size of bond issues and reopening existing ones. In addition to abolishing the transaction taxes on bonds, development of the corporate bond market will also require improving the regulatory process for private placements by balancing investor protection with ease of approval.

A comprehensive review of taxation of the stock market is long overdue. Such a comprehensive review should treat taxation of income from the stock market in the same manner as any other income and at the same time getting rid of inefficient taxes and double taxation of income if that exists. At the moment the tax regime is full of inconsistencies due to ad hoc measures and not in line with international best practices.

Finally, the government should **stop the annual ritual of "allowing black money into the stock market."** Stock market should not be painted as the playing ground for legalizing illegally obtained money.

A comprehensive review of the operations of the stock market in Bangladesh by ADB also identified a number of important operational and market development issues and made recommendations relating to: (i) primary and secondary market development, improved governance through Self-Regulatory organizations (SRO); (ii) trading, clearance and settlement of stocks; (iii) institutional investors, financial literacy and non-resident Bangladeshi's; and (iv) development of derivatives and securitization markets. These issues should also be looked into.

7.3 Fiscal Framework for the Eighth Five Year Plan

The medium-term fiscal framework prepared by GED in the context of the 8th Plan macroeconomic framework establishes an ambitious target for revenue mobilization and commensurate increase in the much needed fiscal spending. To ensure macroeconomic stability, the overall fiscal deficits during the Plan period will be limited to about 5% of GDP, with some increasing reliance of foreign financing to contain pressures on domestic financing.

Table 19: Bangladesh: Central Government Operations, FY2018-2025

Fiscal Year	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
	Actual	Est.	Projections					
Fiscal Indicators:	(As % of GDP)							
Revenue and Grants	9.66	9.84	10.75	11.85	13.06	14.19	15.26	16.35
Total Revenue	9.62	9.69	10.60	11.70	12.92	14.05	15.12	16.21
Tax Revenue	8.64	8.68	9.30	10.20	11.20	12.20	13.20	14.20
O/W NBR Tax Revenue	8.31	8.37	8.90	9.80	10.80	11.80	12.80	13.80
	(As % of GDP)							
Total Expenditure and net lending	14.30	14.67	15.57	16.75	18.06	19.30	20.40	21.52
Non-Development Expenditure including net lending	8.87	9.00	9.42	10.02	11.18	12.30	13.35	14.42
Non-Development Expenditure	8.51	8.80	9.22	9.82	10.98	12.10	13.15	14.22
Revenue Expenditure	7.95	8.06	8.50	9.12	10.30	11.44	12.51	13.60
Capital Expenditure	0.56	0.74	0.72	0.70	0.68	0.66	0.64	0.62
Net Lending	0.37	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Development Expenditure	5.43	5.67	6.15	6.73	6.88	7.00	7.05	7.10
O/W ADP Expenditure	5.31	5.50	6.00	6.58	6.74	6.86	6.92	6.97
Overall Balance (excl. grants)	-4.68	-4.98	-4.97	-5.05	-5.14	-5.25	-5.28	-5.31
Overall Balance (Incl. grants)	-4.64	-4.83	-4.82	-4.90	-5.00	-5.11	-5.14	-5.17
Primary Balance	-2.78	-2.95	-2.72	-2.73	-2.76	-2.79	-2.76	-2.73
	(As % of GDP)							
Financing	4.64	4.83	4.82	4.90	5.00	5.11	5.14	5.17
External (Net) [including market borrowing]	1.14	1.29	1.31	1.33	1.35	1.37	1.39	1.41
Domestic	3.50	3.54	3.51	3.57	3.65	3.74	3.75	3.76

7.4 On the Domestic Resource Mobilization Front

Bangladesh's main challenge will be to increase its tax-to-GDP ratio to 16.2% of GDP, a level commensurate with its state of development. However, it will be extremely challenging to increase the tax/GDP ratio by 5.6 percentage points over the next 6-years (FY20-Fy25). Under the sixth Five-Year Plan (FYP) covering FY10–15, the government tried to increase the tax-to-GDP ratio by more than 4 percentage points, to about 14 percent of the country's GDP. Failing in this attempt, it achieved an increase of less than one percentage point over the five-year period. Once again, the government aimed to increase the tax-to-GDP ratio by 4 percentage points under the ongoing seventh FYP covering FY16-20. While Bangladesh is approaching the final year of the seventh FYP, however, the tax-to-GDP ratio has declined to 8.7% of GDP, and it seems very unlikely that the NBR will achieve its 7th Plan target for revenue mobilization.

Bangladesh has made some progress in rebalancing its tax system by reducing its dependence on trade-based taxes and increasing its reliance on domestic taxes like the VAT and income taxes. This healthy structural shift will likely continue in the coming years, with reliance on the VAT and income taxes growing over time.

Going forward, in order to realize the 8th Plan tax mobilization targets, the focus must be on the VAT and direct (income) tax systems. Implementing the VAT Act of 2012 and carrying out automation and reforms within the VAT administration, must take priority. Detailed roadmaps for these changes have been completed under the World Bank-supported VAT Online Project, but could not be implemented, due to resistance from VAT commissioners. However, the so-called "new" VAT act, adopted in the FY20 budget, has

reversed reform efforts, and the system has become more complicated. New reforms to the VAT law are needed to undo the damage done through the current VAT act.

On the direct tax side, comprehensive reforms are yet to start. NBR officials have drafted a preliminary version of a possible new direct tax law or direct tax code, but that has many deficiencies and needs to be vetted by international direct tax law experts. Delays in implementing the new VAT law, and the lack of political support behind it, have essentially shelved the new law on direct taxes. This issue needs to be addressed promptly, with technical assistance from the IMF and the World Bank, in order to modernize the direct tax codes and implement them effectively. Even if the process starts immediately, it will take at least five years to complete reforms on this front.

Tax exemptions of all kinds are significantly eroding the tax base and tax elasticity. The NBR estimates Bangladesh's tax expenditure to be more than 2 percent of GDP, and the actual figure is probably much higher. Special tax treatments for the RMG and power sectors, along with generous tax holidays and exemptions for special economic zones, are major sources of tax base erosion, and must be reviewed.

Going beyond tax policy issues, the **NBR also must initiate reforms in tax administration in all three wings—VAT, customs and direct taxes—along functional lines.** Efforts should focus on completely automating tax administration functions, which would streamline processes and make them efficient without compromising any safeguards. Key functions to automate include assigning taxpayers (both individuals and businesses) common TINs for all types of taxes; centralizing tax return processing; implementing a payment system that connects taxpayers, commercial banks, the central bank, and the accountant general's office; and developing an auditing process that selects, monitors, and integrates findings with the payment system and taxpayers' records.

Along with restructuring tax administration along functional lines, the **NBR also needs to integrate information sharing among the three wings.** At present, the VAT and customs wings are using business identification numbers for identifying VAT-registered entities, while the direct tax wing uses the TIN for identifying individual taxpayers. There are two parallel registration systems, in other words, and neither is communicating with the other for sharing taxpayer information.

Based on consultations with development partners, it appears that all relevant development partners are ready to provide technical assistance to the NBR and financial support to the government to initiate reforms in the areas mentioned above. The World Bank has been supporting the VAT Online Project with a pay-for-results type programmeme, but performance under the project has been disappointing. Improving the project outcome will require strong political commitment, top=down push from the highest level of the NBR, and a clear understanding of the issues.

7.5 On the Expenditure Front

Looking forward, Bangladesh needs to broaden its range of service delivery programmemes and enhance the quality of its public services. The scope of Bangladesh's public service delivery programmemes will continue to be limited by constraints on domestic revenue mobilization. Greater efficiency with resources is needed in order to get better results from money spent. Ensuring that resources are used wisely will not be easy in the prevailing

political system, which has virtually no accountability. Nevertheless, some progress can be made through enhanced transparency. Areas where transparency is particularly needed are in project selection; in strengthening the PFM system; and in strengthening the implementation and monitoring of public sector projects. Measurable improvements to the non-project public service delivery programmeme will be even more difficult to make because this area requires improving education, improving public health care service delivery, and improving the efficiency of social safety net programmes.

Given Bangladesh's good expenditure control, as demonstrated in its ability to keep the fiscal deficit below the 5 percent of GDP target, Bangladesh does not really need a fiscal rule. For all practical purposes, the 5 percent of GDP target—as envisaged under the 8th Plan--is a benchmark to ensure continued fiscal discipline and has anchored macroeconomic stability in Bangladesh.

In terms of fiscal transparency and PFM reforms, Bangladesh needs to do better. Some progress has been made with e-tendering of projects by ministries, and Bangladesh has made significant progress on the PFM front and in fiscal transparency. However, fiscal transparency is a continuous process and new initiatives are constantly being added to enhance fiscal transparency internationally. Notwithstanding the gains, Bangladesh has weak spots and is challenged to catch up in many areas. To address these weak spots, some simple interventions have been identified, which, if implemented, would enhance Bangladesh's standing on this front globally. Interventions can be done in the short-term (one to two years) to help Bangladesh improve its fiscal transparency, and since Bangladesh does not meet certain criteria set by international agencies (including the US State Department), and hence ranks poorly among international rankings, such as the GFS Index and the Open Budget Index, interventions could improve Bangladesh's fiscal transparency significantly.

In addition to the interventions, efforts should be made over a five- to 10-year period to address areas where more time will be needed. These reforms will require rigorous work and strong political-economic decision making. These reforms, noted below, will help improve fiscal transparency and expenditure efficiency in Bangladesh.

- All **quasi-fiscal activities** by government agencies and the Bangladesh Bank should be clearly defined as quasi-fiscal activities, and some estimates should be provided in the budget. The cost of all quasi-fiscal expenditures needs to be quantified, and the assessments need to be relayed to Parliament and posted to the Ministry of Finance (MOF) website.
- The **budget draft should be intensively scrutinized and vigorously debated,** as well as amended with justified alterations, by the legislature.
- **All contracts relating to the extractive industry and mega infrastructure projects must be made transparent and publicly available.** All production sharing contracts (between international corporations in the resource sector and the government must be put in the public domain.
- Detailed **breakdowns of subsidies to public corporations** should be explicitly bolstered with budget documents.
- **Any supplementary budget** requesting authorization for additional spending **should be presented to Parliament before actual spending is incurred.**

- All fiscal reports and information should be updated online. The data should be readily available in both Bengali and English in user-friendly ways.
- Clear boundaries of the roles and legal provisions of various government bodies involved in fiscal management should be comprehensively defined under one document.
- **Clarity is needed on how profit transfers or dividend payments** from nonfinancial public enterprises **get passed on to the government budget, and this transfer process needs to be determined and enforced.**
- All government procurements should come under the Electronic Government Procurement programme of the government, which is currently underway.
- The medium-term framework for the budget needs to be better aligned in accordance with different national plans, including fiscal year plans.
- Debt management should be done by a single agency or division of the Ministry of Finance.
- Fiscal accounts of the nonfinancial public sector need to be derived by consolidating the budgetary accounts of the central government, local government entities, and the nonfinancial public enterprises.
- Forecasting of the national budget and revenue needs to be streamlined and made more realistic. Forecasting needs to be undertaken jointly by the NBR and the macroeconomic wing of the Ministry of Finance.
- Bangladesh **has a huge unfunded liability, due to civil and military pension systems.** The current pension policy needs to be actuarially forecast, and the issues need to be made public.
- Bangladesh needs to **participate in the Construction Sector Transparency Initiative** to standardize its massive anticipated infrastructure spending.
- Bangladesh must **start building a general government account.** It could start with city corporations and expand to all municipalities.
- More information must be made available to Parliament and to citizens for an **informed public debate on the size and composition of the country's defense budget and its appropriateness in the overall security context.**
- A budget analysis of the impact new policies will have on society needs to be carried out.

Strengthening the oversight system for projects under the ADP will require technical support and capacity-building for the implementation, monitoring, and evaluation division (IMED) of the planning commission. At present, IMED only monitors the amount of money disbursed to projects and does little to monitor physical progress and quality of project implementation. IMED does not have the qualified engineers or other experts who could determine project implementation against contractual specifications. IMED also does not inspect most project sights or perform evaluations. This area will require much improvement, since almost 40 percent of the country's budget is implemented under the ADP, and beyond line ministries IMED is the only government body with the authority to ensure quality project implementation.

Ensuring quality improvements in public service delivery will continue to be difficult, given the weak administration and widespread corruption and politicization across the health care and education ministries. After the issues of universal access and gender balance in the education sector were tackled, the focus shifted to boosting the quality of education in public institutions and vocational schools, in order to minimize skill mismatches in the workforce. Given the decline in quality public education in recent decades, despite the government's success in ensuring universal primary education and broader access to educational institutions, a renewed push must be given to improve quality of instruction and skill development in the country's public education system.

Problems in the public health care system will require strong administrative interventions and de-politicization of government medical colleges and universities. Absenteeism among doctors at government hospitals and clinics has reached epidemic proportions and will require very strong efforts by the health administration to curb. This effort needs to be backed by political leadership. Enhancing the skill level of doctors and medical technicians also is critical, in order for them to keep pace with the rapid changes in the medical field and in medical technology. Along with at least doubling budgetary allocations, ensuring quality health service delivery by government doctors and nurses is required.

Implementing the NSS strategy in phases is the best way to improve targeting. This will require consolidating the 150-plus programmes into several large programmes under the National Social Security (NSS) framework. It also will require the allocation of more public resources for social safety net programmes. The only way to achieve this is in phases that are in line with the plan currently being drawn up with EU technical support.

7.6 Quality of Spending, Relative Shares and Levels of Public Spending, and Related Issues

Despite a good legal framework and strong expenditure management by the Ministry of Finance, Bangladesh suffers from the following problems: (i) inadequate allocation of resources to important social and infrastructure sectors, due to very limited resources; (ii) volatility in the amount or proportion of resources allocated to various sector-based investment programmes, due to shifting priorities and limited resources; and (iii) poor quality of project implementation, due to inadequate supervision and corruption.

Bangladesh spends only about 2 percent of its GDP on education. This is grossly inadequate for a developing country with a very young population suffering from poor education and a serious skill mismatch against what is required of them in the workforce. Although enrollment at the primary school level is close to 100 percent in Bangladesh and the primary dropout rate has declined, primary schools generally suffer from poor facilities and a poor quality of teachers and teaching methods. Bangladesh has achieved remarkable success in achieving a gender balance at the primary and secondary school levels, through free education for all and a stipend programme for girls attending schools. Additionally, the dropout rate at primary schools has decreased significantly, but remains high at the secondary and higher education levels. There is, however, a growing education divide between rich and poor households. This is due in large part to the adoption of English as the preferred language of instruction, and rich families send their children to English language schools, while poor families depend on lower-quality public schools in which Bengali is spoken. The digital divide also is contributing to a greater education divide, as well as a

greater economic and social divide. The standard of higher education is also poor, and most students graduate with only general skills, which contributes to the skill mismatch in the workforce and to unemployment among educated youth. The Madrasa, or religious education system, also contributes to education gaps.

Addressing these issues will require that more public resources be allocated to the education sector. The government understands this but is handicapped by the lack of domestic resources caused by weak revenue mobilization. Efforts to increase resources for the education sector have been repeatedly frustrated by the lack of revenue collection in most of the FYPs. In the education sector, emphasis has been put on enhancing the skill level of the workforce, but this strategy suffers from a lack of properly trained instructors, a lack of training instruments, and the social stigma associated with skill development for blue color jobs.

Public sector resource allocation for the health care sector has been very low in Bangladesh, ranging between 0.6 percent and 0.8 percent of GDP. It is because of Bangladesh's very limited revenue base that the government is unable to spend more on the health care sector. This sector also suffers from a chronic shortfall in resource utilization, as a sizable part of resources allocated every year cannot be used during the fiscal year. Health care expenditure also has been identified as one of the major causes for many households to fall below the poverty line, as low-income families often cannot cope with medical expenses when someone in the family is struck with a serious illness or with an accident that incurs high medical costs. At the same time, the overall state of public health has improved significantly in Bangladesh, with positive developments in various vital statistics. This is borne out in the fact that the average life expectancy in Bangladesh has increased to above 73 years, which is better than the life expectancy rate in India, Bhutan, Pakistan, and Nepal. The child mortality rate also has come down to 22 per thousand, which also ranks above the South Asian countries just noted. Maternal mortality rates also came down in recent years, and these gains notwithstanding, the government understands that allocations for the health care sector need to be increased to at least 1.5 percent of the country's GDP—a possibility if the tax-to-GDP ratio improves.

Budgetary allocations for social safety net programmes suffer from resource constraints and administrative problems. The amount allocated to social safety net programmes is reported to be about 2.1 percent to 2.3 percent of Bangladesh's GDP. However, this amount also includes at least 0.6 percent to 0.8 percent allocated to the government pension system. Thus, real spending for social safety net programmes amounts to about 1.5 percent to 1.6 percent of GDP, which is inadequate for a least developed country like Bangladesh, which has more than 30 million people below the national poverty line. It also is believed that up to 40 percent of the resources allocated for social safety net programmes are misdirected, due to inefficient targeting and corruption in the distribution and selection of beneficiaries. Administration of the social safety net programme also has been complicated by the very large number of programmes offered (more than 150 and increasing) and by the large number of ministries (more than 20) responsible for administering the programmes. The number of programmes has ballooned over time, due to the lack of a central delivery system. In many instances, in fact, supports are provided by development partners in ad hoc manners.

The government is in the process of improving the targeting system by introducing cash transfers directly to beneficiaries' bank accounts or by transferring money to accounts electronically. At present, about 50 percent of recipients receive cash transfers directly to their bank or mobile accounts. Following up on this, the National Social Security branch has started to design a strategy already adopted by the government with EU technical support. The aim of the NSS strategy is to consolidate all social safety net programmes into one comprehensive programme based on a life cycle approach.

On the ADP side, serious quality and cost escalation issues exist, which underscore the importance of prudent money management in Bangladesh's public investment programmes. This is particularly true in the area of ADP implementation. The size of the ADP has been increasing in recent years, particularly with the ongoing rollout of a number of mega projects, each costing billions of dollars. Many of the mega projects are in the area of power generation, including nuclear power (one project cost $13 billion). The construction of a deep seaport, for handling coal for power plants, and the establishment of a power hub, which cost about $7–8 billion in the initial stage, also have taken priority. A bridge over the Padma River ($4 billion), and a railway line over the bridge, along with connectivity ($5 billion), have required massive outlays of funds. Total ADP size in the new FY20 budget is more than $24 billion, which accounts for about 38 percent of the total budget. It is generally believed that the mega projects are overpriced, contracted without an open bidding process, and often awarded to unsolicited bidders with Chinese and Russian government funding. Many of these large projects have been accepted and contracted without proper appraisal, and without environmental and socioeconomic cost benefit analyses, raising concerns among Bangladeshi citizens, NGOs, and environmentalists.

About two-thirds of the ADP is financed from domestic resources. There are more than 1,200 projects in the ADP beyond the 10 to 12 mega projects. These large, medium, and small projects suffer from project mismanagement, planning, and compliance problems. Many of the smaller projects in rural areas are implemented by a special agency called the Local Government Engineering Department (LGED), under the aegis of the Ministry of Local Government and Rural Development. Major roads and highways are developed and maintained by the Roads and Highways Division (RHD). Corruption is rampant in these infrastructure projects. The LGED and RHD are highly corrupt departments, and the quality of the projects they oversee is generally very poor.

8. Concluding Observations

Bangladesh has made remarkable progress in terms of economic growth and poverty reduction. The outlook for sustaining the growth momentum is good but will require continued prudent fiscal and other macroeconomic management. The government must increase its role in providing physical infrastructure oversight and efficient service delivery. The fiscal equilibrium that has been maintained so far in terms of low revenue, low fiscal deficit, and a low size of government will not keep pace with sustainable development goals (SDG). If Bangladesh is to be transformed into an upper-middle-income (UMI) country by FY31 and a high-income country by FY41, drastic measures must be taken. To achieve the SDG and UMI country status will require massive public sector investments in education; health care; poverty alleviation; efforts to mitigate the impact of climate change and other related natural calamities; and in efforts to ensure industrial growth in an environmentally sustainable manner. Bangladesh cannot meet these growing demands with its current levels of domestic resource mobilization and the current state of the financial system.

Accordingly, reforms must be initiated in all three major areas of taxes, both in terms of tax policy and tax administration. Key reforms should include (i) separating tax policy functions from tax administration functions and shifting tax policy functions away from the NBR to a separate division under the Ministry of Finance; (ii) introducing the VAT Act of 2012 without making any fundamental changes, despite pressures from business groups; (iii) reviewing the drafts of the Customs Act and Direct Tax Codes with national and international experts and stakeholders before their finalization; (iv) automating and streamlining all tax-related business processes; and (v) transforming tax administration along functional lines.

Given the limited public resources in Bangladesh, it is even more imperative that they are efficiently used, to ensure best value for money. Several recommended measures have been suggested to improve fiscal transparency and cut down on waste across all government fiscal and quasi-fiscal activities. In addition, massive improvements are needed in the quality of public education and public health care delivery. Interventions in the education sector will require not only a massive increase in resource allocation but also major efforts to ensure improvements in quality of instructors and instruction materials, laboratory facilities, and access to the internet. On the health care front, strict monitoring of doctors and nurses is needed to ensure their attendance and service quality. This can be accomplished through improved human resource administration, and health care sector resources must be doubled to at least 1.5 percent of GDP to ensure a minimum standard for public health delivery.

The government has already identified many of problems and expressed its desire to address these fundamental issues. The Seventh Five-Year Plan and the Perspective Plan 2041 indicated the Bangladeshi government's commitment to achieve the objectives. However, as in the past, wide gaps between commitments and actual implementation exist in most areas. Reforms in the areas of tax policy and tax administration will require strong political commitment, which is lacking. Until recently (FY11–15), revenue growth was averaging around 18.4 percent annually, broadly in line with the nominal growth of GDP. Although the level of revenue-to-GDP remained almost unchanged at a very low level, the nominal growth in revenue, with its relatively low rate of inflation, was considered adequate for meeting the increasing demands for outlays. Weak implementation capacity also helped contain expenditure growth and thus the government could meet its fiscal requirements while showing double-digit revenue growth. However, in recent years, as revenue growth slowed to about 6.3 percent (average during FY16–18), expenditure growth is outstripping revenue and contributing to higher domestic borrowing, due to lack of reforms. Thus, pressure is building. As the demand for increased services and infrastructure development intensifies, and as the growth of revenue slows further in the absence of fundamental reforms, pressure may be intensifying on the Bangladeshi government to undertake serious tax policy and tax administration reforms at the NBR.

On the expenditure front, quality of service delivery and value for money are two important issues. Lack of accountability and weak monitoring and evaluation have contributed to poor service delivery, and extortion exists at almost all service delivery points. Concerning the ADP, highly inflated price tags and substandard construction undermine project quality and return on investment. Without a strong push from the highest-ranking political authorities, ensuring value for money in public sector projects will remain elusive.

Financial sector in Bangladesh is not currently expanding faster than the nominal GDP growth, which it must, given the very low degree of financial deepening in Bangladesh. The recent shallowing of the financial sector in terms of its depth and breadth will not enable it to support the real economic growth in a sustainable manner. Banking sector, which is the best performing component of the financial sector, is also lagging behind in terms of asset to GDP and loans to GDP ratios, and also plagued with very high nonperforming loans. The other segments like the stock market have problems which would need to be addressed fundamentally and not by interventions through ICB and other public sector financial institutions. The bond market and the insurance sectors would need fundamental reforms with a view to promoting both supply and demand sides of the bond market and insurance coverage and services. A weak financial system will not be able to support an expansion of the balance sheets of the financial sector operators in a sustainable manner which is a pre-requisite for sustaining economic growth. Exchange rate policy should also be flexibly managed with a view to ensuring export competitiveness and realizing BOP objectives including the imperative for foreign exchange reserve buildup in line with expansion of international trade.

Study 2

Strengthening the Investment Climate to Promote Domestic and Foreign Private Investment

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1. Overview

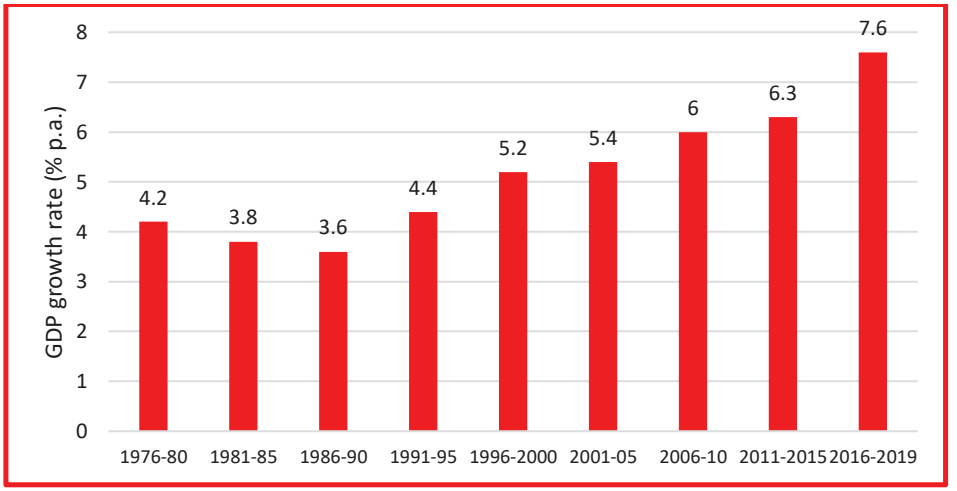
The investment climate for business can have a determining influence on private investment (World Bank 2004). There are different aspects of the investment climate including macroeconomic management, regulatory and taxation regime, infrastructure supply and trade logistics, financial interventions and functioning of the land and labor markets. For example, sound macroeconomic management to maintain macroeconomic stability helps keep real interest rates low, allows long-term investments to be made by reducing uncertainty about movements of prices and exchange rate and helps create fiscal space for public spending on infrastructure and human development instead of debt servicing. Complex regulations and bureaucratic hurdles tend to increase the transaction costs of doing business and thereby hurt the growth of investment. On the other hand, enabling regulations that protect investor interests and simplify business transactions encourage private investment. In today's globalized world where capital is fairly mobile, weak domestic investment climate characterized by unstable macroeconomic environment, high cost of trade logistics, and riddled with too many regulations and bureaucratic hurdles will not only adversely affect the inflow of foreign investment but can also cause domestic capital flight to more hospitable investment environment.

The regulatory regime in particular can badly hurt the investment climate. The development experience of South Asia, especially India, provides an important example of how regulatory burden can overwhelm and choke private investment. While all South Asian economies started their development journey on the wrong footing with an over-dose of regulations (Ahmed 2006), the Indian investment climate for private investment in particular had the dubious distinction of being dominated by the "license raj" (Mishra 2007). Subsequent deregulation drive in India since the 1980s ushered in a sea change in the investment climate for private investment that led to a major private sector led growth environment (Ahmed, 2007; Mishra, 2007).

2. Lessons of Bangladesh Experience

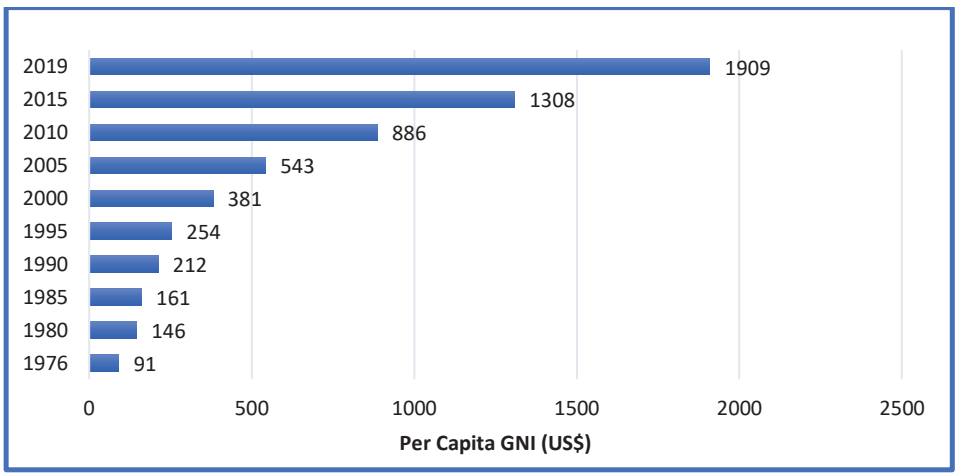
GDP in Bangladesh has grown at a steady pace since independence, climbing from an average of below 4% during 1974-1990 to 6.4 % in 2010-19 (Figure 1). Supported by a solid population management policy that brought down the rate of growth of population from 2.5% in the 1970s to 1.4% in 2011, per capita GDP growth surged from less than 2% per year to 6% over the same periods. The acceleration of per capita GDP during 2006-2019 is truly remarkable and along with generous inflow of external remittances, it rapidly boosted the expansion of per capita Gross National Income (GNI, which enabled Bangladesh to cross the threshold of lower middle-income country (LMIC) as defined by the World Bank (Figure 2).

Figure 1: Bangladesh 5-year Average GDP Growth Path



Source: Bangladesh Bureau of Statistics (BBS)

Figure 2: Per Capita Gross National Income ($)



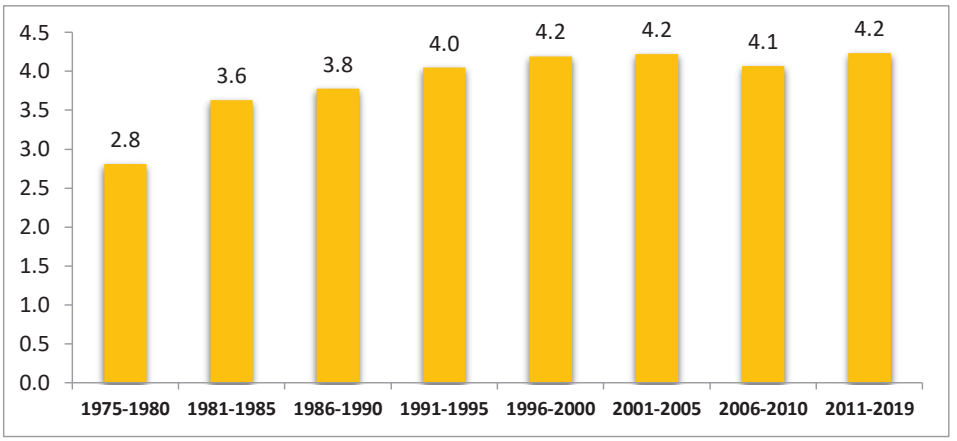
Source: Bangladesh Bureau of Statistics

2.1 Critical Role of Capital Accumulation

A review of determinants of GDP growth shows that the accumulation of capital was the most important determinant of growth (Ahmed 2015; World Bank 2012). This is consistent with the growth experiences of East Asia when they started their journey from their low-income stage. While there is tremendous scope for improving the contributions of labor force growth, human capital and efficiency of factor use (total factor productivity), the accumulation of capital will continue to be a major driver of growth in Bangladesh in the coming years.

The reason for this is that while presently the incremental capital output ratio (ICOR) is still on the low side (4.2), it has already risen substantially from the very low levels usually found in a very low- income peasant economy, as was the case in Bangladesh in the early 1970s, to LMIC (Figure 3). It will tend to rise further as development proceeds. This has happened in all countries that have moved from LMIC to UMIC status. When a country is in the LMIC status as Bangladesh, the production pattern is still dominated by relatively low-capital intensive agriculture and non-farm enterprises. As the production path moves towards a dominant formal services and modern manufacturing and other modern industrial activities, the capital intensity of production would rise. Even within formal manufacturing the adoption of new technology will tend to increase the capital intensity of production in this age of the Fourth Industrial Revolution (4IR).

Figure 3: Bangladesh 5-year Average Incremental Capital-Output Ratio



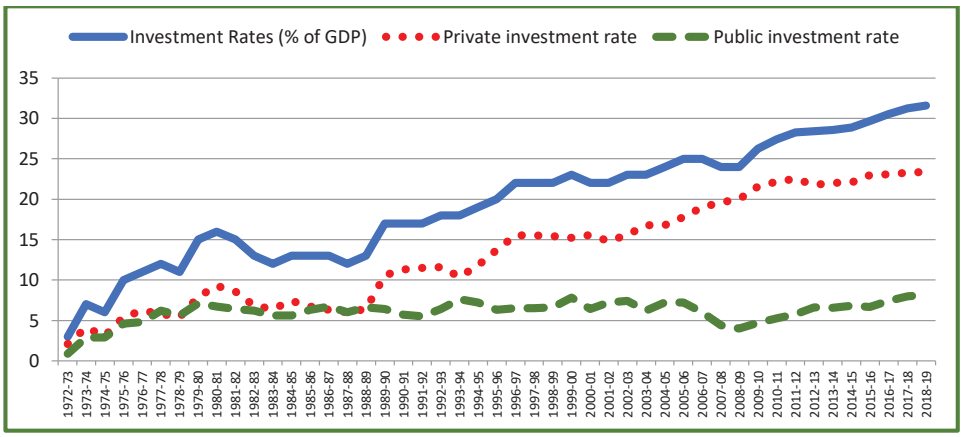
Source: BBS

The evidence of this transformation of production and adoption of new technology is already being felt in Bangladesh in all sectors. Even the most labor-intensive manufacturing, the ready-made garments (RMG) sector, is transforming rapidly over the past few years with the adoption of new technology that is inherently more capital intensive than the previous technique of production. Modern services such as banking, finance, ITC, tourism, and shopping malls are much more capital intensive than informal services related to small-scale retail trade and personal services. In construction, the rapid adoption of new technology in large-scale construction projects related to modern housing, office and shopping complexes, roads and bridges, ports and power stations are all increasing the capital intensity of production. Even in agriculture, there is some evidence of the use of modern farm machineries. Further new investments in education that is focused on tertiary education, ICT, research and science and technology will increasingly raise the capital intensity of education as compared with earlier investments in primary and lower secondary education. Health care is similarly becoming more technology-oriented and capital intensive as the incidence of mass-communicable diseases falls and the demand for curative health care grows for an ageing population.

2.2 Investment Performance During the Sixth and Seventh Five Year Plans

The long-term investment trend is shown in Figure 4. The investment effort in both public and private sectors started rising from the very low base in the early 1970s, but private investment remained weak well until 1989 hovering on average around 5-6% of GDP. Indeed, in the early years after independence, public investment took the lead in boosting the investment rate based on generous availability of official development assistance (ODA). However, the public investment effort moved to a declining path after 2000 as ODA inflows fell and public resource mobilization effort did not gain adequate speed. Indeed, this trend continued until 2009 when the public investment rate fell to a low 4% of GDP, down from a peak of 7.8% in 2000.

Figure 4: Investment Trends (% of GDP)



Source: BBS and Ministry of Finance

2.3 Recovery of Public Investment

There has been an important recovery in public investment during the 6th FYP and 7th FYP. This was spear-headed by the government's efforts to increase public investment in infrastructure, especially power and transport network. Public investment grew substantially from a low of 5% of GDP in FY2010 growing to 8.2% of GDP in FY2019. This effort paid off handsomely, especially in terms of the rapid growth of power generation that was essential to support the increase in GDP growth. Even so, the public investment rate remains below what is needed to meet the government's Perspective Plan 2041 (PP2041) targets of average GDP growth of 8.5% per year during the 8th FYP and the elimination of extreme poverty by FY2031.

2.4 Private Investment Rate Lacks Momentum

Unlike the stagnant public investment path well unto FY2009, the private investment effort accelerated after FY1989 in response to the initiation of the various liberalization measures, especially trade and investment deregulation (Ahmed 2005; Ahmed 2006). Private investment rate climbed from a low of 6% of GDP in FY1989 to 20% of GDP in FY2009. In many ways, these 20 years transformed Bangladesh from a public investment driven and regulated economy to a private investment-led market economy.

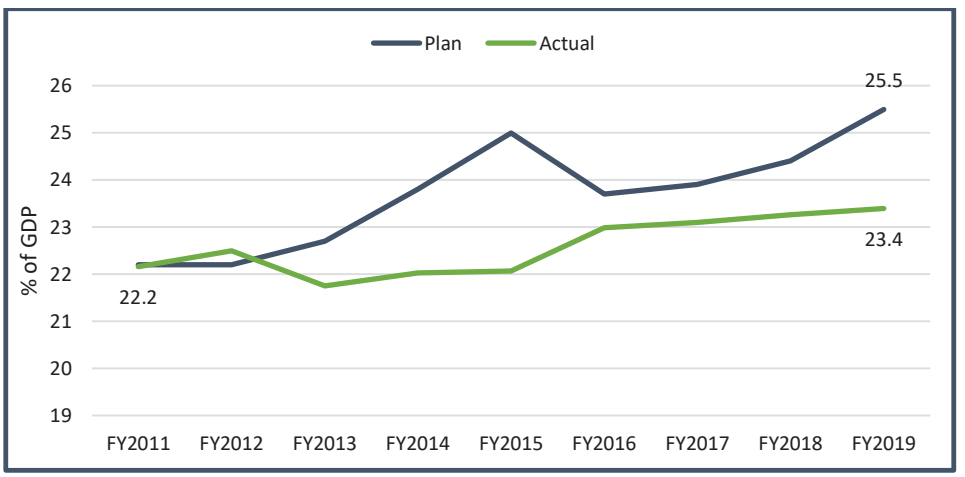
Unfortunately, however, the private investment rate did not gain momentum during the 6th FYP or the 7th FYP (Table 1). While the public investment rate has already out-performed its target during the first four years of the 7th Plan, the private investment rate has shown signs of stagnation at the 22-23% of GDP rate over the past 9 years (Figure 5). The Sixth Plan aimed at accelerating private investment rate to 25% of GDP by the end of the plan period (FY2015). The actual performance fell far short, which caused a major revision in the private investment targets for the 7th FYP. Even so, actual performance during the first 4 years is much lower.

Table 1: Actual Investment Performance During 6th and 7th FYP (% of GDP)

Plan Period	Total Investment		Private Investment		Public Investment	
	Plan	Actual	Plan	Actual	Plan	Actual
Sixth Plan average[1]	29.9	28.3	23.2	22.1	6.7	6.2
Seventh Plan Average	32.0	30.4	24.7	22.8	7.3	7.6

Source: Sixth and Seventh Plan and BBS

Figure 5: Private Investment Performance Under the 6th and 7th FYPs



Source: Sixth and Seventh Plans and BBS

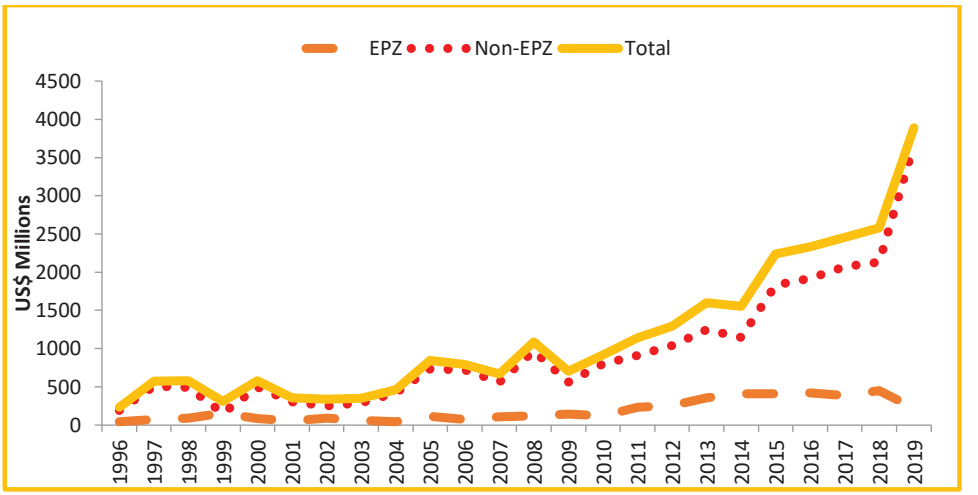
2.5 Low Levels of FDI Inflows

An important factor that has contributed to stagnation in the private investment rate is the lack luster response from foreign direct investment (FDI). Starting from very low levels, FDI flows gained some momentum in dollar amounts over the 6th- -7th FYP periods, reaching $3.9 billion in FY2019 (Figure 6). This is a welcome development, but this is much lower than projected under the 7th FYP and much below potential. Additionally, the surge in FY2019 is owing to inflow of $1.5 billion from the purchase of the Akij Tobacco Company by Japan Tobacco Inc[2]. This is a one-off transaction that is not likely to be repeated. Excluding this transaction, the trend inflow is about $2.4 billion.

1 The private and total investment targets for the first year of the Sixth Plan (FY2011) were revised to reflect the revision of the national accounts that changed the base year national accounts numbers.

2 See Bloomberg 2018

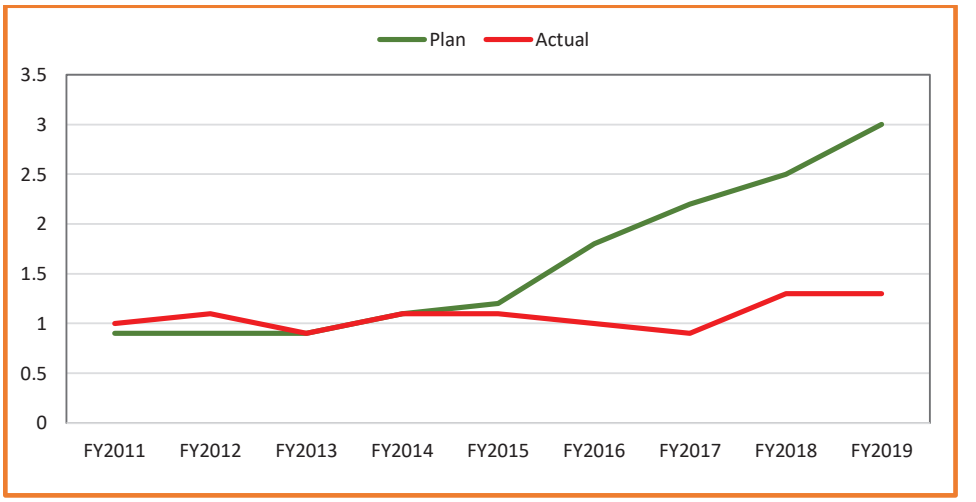
Figure 6: Inflow of FDI ($ millions)



Source: Bangladesh Bank

The 6th FYP recognized that mobilization of FDI would take time as a new government had recently taken over in an environment of low FDI inflows. So, the FDI targets were very modest, around 1% of GDP per year). During the 7th FYP, it was hoped that the solid track record of overall economic performance and GDP growth in particular under the 6th FYP would boost the inflows of FDI. Consequently, the 7th FYP set relatively ambitious targets for FDI. Unfortunately, this optimism did not materialize. As a share of GDP, FDI reached 1.2% in FY2019, whereas the 7th FYP projected that FDI would reach 2.5% of GDP in FY2019 and 3% of GDP by FY2020 (Figure 7).

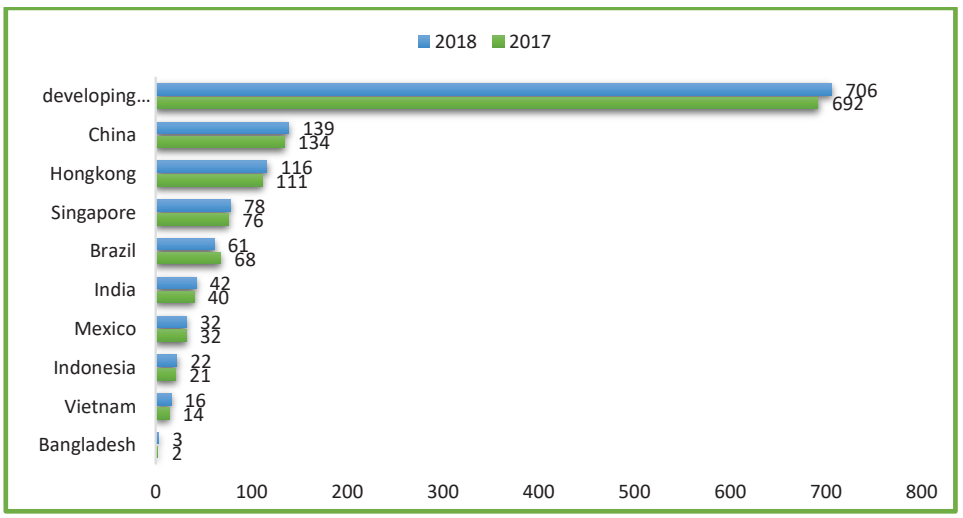
Figure 7: Planned Versus Actual FDI Inflows (% of GDP)



Source: 6th FYP, 7th FYP and Bangladesh Bank

Importantly, total FDI flows in Bangladesh are relatively insignificant in relation to total supply to developing countries. In 2018 total global total FDI inflows were estimated at 1.3 trillion US dollars, of which developing countries received $706 billion (54%). The largest recipients among developing countries are shown in Figure 7. As compared with $3 billion FDI inflow in Bangladesh in 2018, FDI inflows amounted to $139 billion in China, $42 billion in India, $22 billion in Indonesia and $16 billion in Vietnam. These numbers easily dwarf the $3-4 billion inflow in Bangladesh. The negligible share of FDI inflows in Bangladesh compared to the total inflows into developing countries suggests that the foreign investment potential is huge. Bangladesh needs to get its act together to claim a larger share of the foreign investment pie. This needs to be a major investment financing target for the 8th FYP.

Figure 8: FDI Inflows in Selected Countries



Source: UNCTAD 2019

2.6 The Investment Challenge for the 8th FYP

The current total average investment rate of 30.4% of GDP is still a solid effort and will support an average GDP growth rate of 7% per year under the present ICOR. But this is not likely to be adequate to take the economy to the next stages of the development path involving sustained 8% plus average GDP growth rate as capital intensity grows and ICOR rises. Even with a modest increase of ICOR to 4.3, total investment rate needs to grow to 35.5% on average to support the 8.3% average GDP growth envisaged for the 8th FYP under the PP2041 (Table 2). The increase in the average investment rate by 5.1 percentage points will be a huge challenge. Public investment has done well and could grow by another 1.1 percentage points to an average of 8.2% of GDP if it is supported by a strong public resource mobilization effort. The remaining 4.3 percentage points will have to come from the private sector. This is a huge policy challenge for the 8th FYP since the private investment rate has increased by a modest 1.2 percentage points over the last nine years.

Table 2: Projected Investment Rates for the 8th FYP

Indicators	6th FYP (actual)	7th FYP Actual)	8th FYP Projected
ICOR	4.5	4.0	4.3
GDP growth rate	6.3	7.6	8.3
Investment rate	28.4	30.4	35.7
Public	6.3	7.2	8.2
Private	22.1	23.2	27.5

Source: Macroeconomic Framework for the 8th FYP

The stagnation in domestic private investment during the 7th FYP and the low inflows of FDI suggest that notwithstanding past progress, there are still impediments to the expansion of private investment in Bangladesh in terms of the attractiveness of the investment climate. For FDI, the policy challenge is not just to improve the investment climate in small steps but to fast-track the reforms in order to compete with other host countries who are also reforming their investment climate. This relativity is an important dimension for the Bangladesh development strategy in a globally-integrated world where trade and investment flows are competitively determined by own country as well as other country reforms.

The remainder of this background paper highlights the main impediments to private investment, both domestic and foreign, based on available evidence from Bangladesh investor surveys and cross-country experiences. It is important to note that the overall investment climate depends upon a range of factors including macroeconomic policies, regulatory environment, infrastructure supply, land and labor supply, and political stability. For this paper, the political environment is considered as given. On the whole, the political environment in Bangladesh is stable and is generally hospitable to both domestic and foreign private investments.

3. Progress with Improving the Investment Climate for Private Sector

The rapid growth in private investment rate from 6% of GDP in 1989 to 20% in 2009 did not happen by accident. A number of good policies including sound macroeconomic management, trade and investment deregulation, the expansion of infrastructure services and expansion of labor and quality improvements contributed to that effort. A detailed review of these determinants is available in Ahmed (2005; 2006; 2015). A review of progress with these policies during the 6th FYP and the 7th FYP is provided here to set the context for the required reforms under the 8th FYP.

3.1 Sound Macroeconomic Management

Barring the early years of independence, sound macroeconomic management has been a hallmark of economic policy making in Bangladesh. Occasional hiccups and deviation from this path were quickly corrected. This good tradition was by and large maintained during the 6th FYP. During FY2011-FY2012, monetary policy was highly expansionary that contributed to asset price surge, inflation and exchange rate instability. This was soon corrected and macroeconomic stability was restored. So, on average, the long -term trend of various macroeconomic management indicators show a facilitating environment for the expansion of private investment. These include low fiscal and current account deficits, prudent monetary policy, and flexible management of the exchange rate. As a result, the

long-term inflation rate has been in single digit and on a declining trend, real interest rate has been relatively stable and the real exchange rate has avoided extended periods of real appreciation. Total debt to GDP ratio is low and declining and external indebtedness is very manageable. The stability of the macroeconomic environment has been a major enabler of the rapid expansion of private investment (Ahmed 2015).

In today's world of global markets and competition, the cost and efficiency of financial services can often make the difference between a competitive and non-competitive firm. In low income developing economies the financial sector typically tends to be dominated by banking enterprises. Non-bank financial institutions normally tend to be at an evolutionary stage. So, much of the financing for private enterprises is typically provided by the banking sector. This situation is also representative of Bangladesh, even though the country has moved ahead into LMIC status. Reforms over 2000-2011 periods have deregulated the banking sector that has facilitated a major transformation of the banking sector from an inefficient public-led activity into a competitive and relatively more efficient private sector-led activity. The resultant financial deepening has greatly supported the expansion of private investment, exports and GDP. Progress was also made to strengthen the stability of the banking sector by increasing regulatory risk capital adequacy and lowering the incidence of non-performing loans (Ahmed 2020).

Macroeconomic management performance has been mixed so far during the 7th FYP. On the positive side, fiscal deficit has been contained at around 5% of GDP, the national debt to GDP ratio continues to fall, monetary growth has stabilized inflation and nominal interest rates are stable. Notwithstanding this good performance, over the past 2-3 years, a number of macroeconomic challenges have emerged that require urgent policy attention to avoid a serious macroeconomic downturn in the coming years. These are: very slow growth of tax revenues that may contribute to excessive public borrowing and thereby create pressure on interest rate and inflation and crowd-out private investment; a slowdown in export growth which could slow the growth of imports and hurt private investment and GDP growth; and fall in the deposit to GDP ratio along with rising incidence of non-performing loans (NPLs) leading to pressure on the banking sector (Table 3). The government is aware of these challenges, but firm measures to reverse these trends are yet to happen.

Table 3: Slippages in Macroeconomic Performance during 7th FYP

Indicators	7FYP Targets	FY2016	FY2017	FY2018	FY2019
Tax/GDP ratio	16.1	8.8	9	8.7	8.5
Export growth (average)	12	8.9	1.7	6.5	8.5
NPL (%)	8.8	9.2	9.3	10.3	11.7

Source: Ministry of Finance and Bangladesh Bank

The most important macroeconomic challenge is to undertake fundamental tax reforms to raise the tax to GDP ratio in line with the 7th FYP targets. The tax challenges and the associated reforms are well known (Ahmed 2019). The government now needs to implement these reforms with an urgency, as the revenue constraint is growing. On the export front, several actions are needed (Government of Bangladesh 2019b)). Related to macroeconomic management, the most urgent policy reform is to reverse the sharp appreciation of the real exchange rate (Ahmed and Sattar 2019a). Banking reforms are also long overdue. Instead of changing definitions of NPLs and frequent loan restructuring that

simply magnify and shift the problems to a future date, the government should take serious actions to address the underlying banking sector governance problems, especially in the public banks, and launch a strong loan recovery effort (Ahmed 2020; 2019b; 2019c).

3.2 Investment Deregulation

In the 1970s and 1980s Bangladesh manufacturing and organized services were characterized by a domination of state-owned enterprises and state controls over prices, investment and external trade. The deregulation process started in the 1980s but gained momentum after 1989 (Ahmed and Sattar 2003). Since then, there has been a major and progressive investment deregulation to boost domestic and foreign investment. The deregulation effort has involved privatization, removal of quantitative restrictions, simplifying business registration process and encouraging foreign investment through relaxation of ownership restrictions. Foreign currency restrictions on inflow of foreign investment and outflow of profits have also been progressively eased including very recently foreign private borrowing for investment, although there is scope for improvement. This deregulation drive has had a strong positive impact in spurring the growth in domestic investment over the 1990-2009 periods.

The deregulation process continued during the 6th FYP and the 7th FYP but at a slower pace. The main focus of these reforms has been to streamline the regulatory environment for FDI and reduce the transaction costs by reforming the Bangladesh Investment Board into a one-stop shop for managing all clearance requirements and facilitating FDI. The establishment of the Free-Trade Zones (FTZ) and Special Economic Zones (SEZs) have sought to address the important constraint emerging from serious land shortage and the associated complex land acquisition process. These institutional reforms have contributed to the recent increase in FDI flows.

3.3 Trade Liberalization

Much of the trade liberalization happened during 1990-2005 (Ahmed and Sattar 2004). Although Bangladesh was a late starter compared with other developing countries including in South Asia, the magnitude of liberalization is impressive when measured against the starting point. This involved virtual dismantling of almost all quantitative restrictions on trade, sharp reduction of average trade tariffs and the establishment of the free trade zones (Export Promotion Zones (EPZs)). The hugely positive response of the readymade garments (RMG) sector to trade liberalization and related other policies (such as back-to-back LCs, fiscal incentives and access to concession trade finance) is illustrative of the role trade liberalization in promoting investments, exports, GDP growth and employment.

Unfortunately, trade reforms have taken a back seat during the 6th FYP and the 7th FYP. Although the government recognized the importance of export-led growth and adopted an export-led growth strategy, trade reforms did not happen partly because of revenue reasons but also because of intensive lobbying by the beneficiaries of trade protection. Consequently, second-generation trade reforms did not happen and the trade regime has remained highly protected (Ahmed and Sattar 2019b). A major consequence of the protective trade regime is the existence of a serious anti-export bias. While the RMG sector was shielded from this bias by instituting an enclave-type free-trade regime for RMG only and other fiscal incentives, other exports suffered. Consequently, export diversification has not happened.

3.4 Fiscal Incentives

To attract foreign investment and promote domestic investment the Government offers a fairly liberal set of fiscal incentives involving tax holidays, lower income tax rate, accelerated depreciation and low import duties on capital and intermediate goods imports. Exports also enjoy duty drawback benefits. The effectiveness of these incentives for investment need to be reviewed through proper research. A recent research concluded that export subsidies did not contribute to export diversification since its beneficial effects were more than offset by the disincentive effects of trade protection and more recently a sharp appreciation of the real exchange rate (Ahmed and Sattar 2019a). An added concern is the fiscal cost of these subsidies and tax exemptions at a time where the revenue constraint is growing.

3.5 Infrastructure Supply

In the globalized environment of trade and investments it is most important for countries to be competitive and the quality of infrastructure is a key input for it. Energy and transport are essential elements of the modern production and distribution processes and the efficiency and relative cost of these inputs are often a key determinant of competitiveness in the global economy. Good macroeconomic management, investment and trade liberalization, generous inflow of remittances and low-cost labour all helped the surge in private investment during the FY1989-FY2009 periods. Yet, due to the inadequacy of public investment, infrastructure supply lagged behind. As a result, in 2009 Bangladesh was facing substantial infrastructure challenges, especially in the area of supply of power, where frequent outages were a common phenomenon. It became obvious that without a major investment effort in infrastructure, the growth momentum might be jeopardized. Accordingly, the 6th FYP prioritized the need for improved power, energy, transport and other infrastructure for achieving its growth targets.

The 6th FYP put highest priority to improving the supply of electricity. Major expansion programmes in power and gas supplies were identified for implementation. The policy and institutional support also sought to help leverage private investments alongside public investments in the energy and infrastructure sectors. The financing strategy emphasized both public funding as well as financing based on public-private-partnership. Emphasis was also placed on improving efficiency and service delivery through a series of structural reforms involving pricing policy and institutional reforms. The power sector strategies and policies were well implemented and the 7th FYP further consolidated this progress.

The most impressive performance happened in the expansion of power generation capacity. This growth in generation capacity along with expansion of transmission and distribution networks have helped to increase the growth of per capita consumption of electricity and improve the access of the population to electricity. Good progress was made in increasing private investment in power generation and opening up of foreign trade in electricity. However, the progress in expanding primary energy supply and in improving the energy sector finances was limited.

In the transport sector, the 6th FYP and 7th FYP strategies sought to develop an efficient, sustainable, safe and 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 to the introduction of modern technology for increasing

capacity and improving quality and productivity of the system, development of the two sea ports (Chittagong and Mongla) 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) was set for December 2021. Substantial progress of construction works of three more MRT Lines (Line-1; Line-5 North; and Line-5 South) were expected by the end of the 7th FYP. The strategy also sought to improve resource mobilization through introduction of user charges and fees, and promote greater private sector participation in transport infrastructure services.

The objectives and strategies of the 6th FYP and the 7th FYP for the transport sector were sound. However, a review of implementation performance shows mixed results. The transport sector along with energy sector has received high priority in budget allocation. Significant new transport infrastructure has been added over the periods FY2011-FY2019 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 the 8th FYP. Yet, the agenda is unfinished.

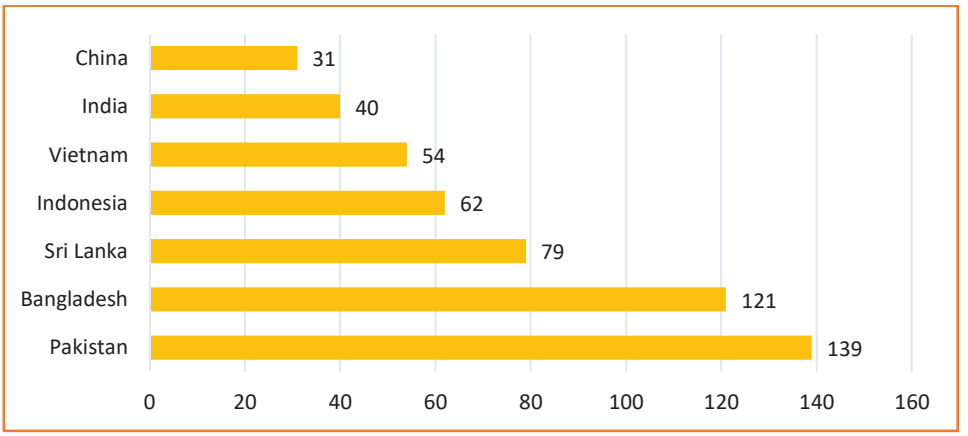
A major challenge has been implementation capacity constraint (Government of Bangladesh 2018). Consequently, while many roads and bridges projects have started, completions have lagged behind. Progress in implementation has been similarly below target for Railways and Inland Water Transport. For inland 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 urban transport improvement efforts have under-performed owing to the delays in implementing mass transit projects. 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 public-private-partnership (PPP) based transport network development has lagged behind target. The PPP activities have shown some recent signs of recovery, which is encouraging. Yet, the unfinished agenda remains large. 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. The continued subsidization of diesel and the absence of road pollution taxes make transport sector an important and growing source of carbon emission (Ahmed and Khondker 2018).

The unfinished agenda for transport-related infrastructure service delivery is reflected in the Bangladesh ranking for infrastructure services reflected in the Logistic Performance Index (LPI) prepared by the World Bank. For 2018, Bangladesh infrastructure services is

ranked 139 among 164 countries, which is considerably weaker than infrastructure service performances of China (26), India (40), Vietnam (54) or Indonesia (62) (Figure 9). Clearly, there is a long way to go.

Figure 9: World Bank Infrastructure Performance Rankings 2018



Source: World Bank LPI Performance Rankings

3.6 Supply of Labor and Employment Policies

The abundant supply of labor has perhaps been the most positive contributor to private investment and expansion of manufacturing production and exports, especially in RMG. Low wage cost remains a substantial advantage for Bangladesh that contributes to cost competitiveness in labor intensive manufacturing such as RMG. Government policy in regards to education and labor markets has played an important facilitating role. Bangladesh labor markets relating to all three major sectors (agriculture, manufacturing and services) work flexibly and the transaction costs of employment in terms of hiring, termination and wage setting are among the lowest in developing countries and certainly within South Asia (Ahmed, 2015).

The main concern on the labor force side is the low quality and productivity of the labor force. Owing to this, new technology is eroding the advantage of low-cost labor. Despite major efforts and notable progress under the 6th FYP and the 7th FYP to strengthen education and training, the overall education achievement of the labor force remains low. For example, according to the latest available Labor Force Survey 2016-17 (LFS 2016-17), some 31.9% of the workforce had zero education, 25.8% had only primary level education, 30.8% had secondary level education, 6.0% had higher secondary education and 5.6% had tertiary plus education (BBS 2018). This poorly educated work force cannot meet the skills challenge of an UMIC. Additionally, there are concerns about the quality of education and training. For example, LFS2016-17 shows that 10.6% of the youth labor force is unemployed of which 64% had secondary level or higher education and 36% had higher secondary or tertiary education, indicating the low learning and job skills readiness of the education system (Ahmed and Sattar 2019c). While the flexibility of the labor market is a big plus, recent developments in the RMG sector suggest that the absence of prudential regulatory norms regarding worker safety and social insurance including coverage of accidents is a serious problem that needs to be corrected.

4. Emerging Constraints to Private Investment

The above analysis suggests that the returns to good policies can be substantial. But it also begs two questions: first, why the FDI response in Bangladesh has been sluggish in comparison with the dynamic Asian economies? and second what explains the stagnation of the private investment rate over the past few years? The answers to these two questions are inter-related and can be obtained by reviewing the emerging constraints to investment relative to performance in competing countries.

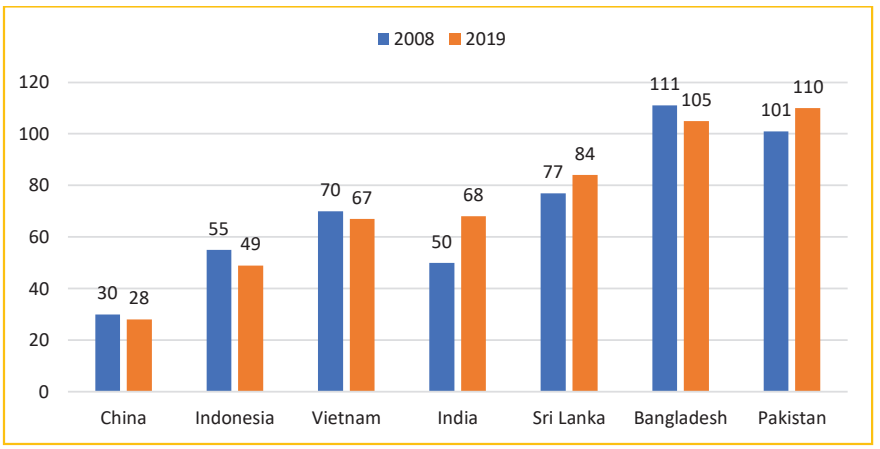
In recent years a range of cross- country indicators of investment climate are regularly prepared on an annual cycle by specialized international agencies based on investor surveys. These indicators provide useful data on the emerging constraints to private investment. While the implications of each constraint will likely vary by countries, the wealth of knowledge available from these global surveys can be productively used to inform policies. These cross-country comparisons are especially helpful to understand why some countries are able to attract more FDI inflows than others.

4.1 Global Competitiveness Index (GCI) Rankings

The Global Competitiveness Index (GCI) prepared by the World Economic Forum has now become a fairly standard reference point for assessing the competitiveness of an economy in relation to other countries in the list. The GCI measure is available as a composite index as well as by individual components that comprise the index. The individual components (12) provide fairly in-depth views about the regulatory environment faced by investors in any country as well other factors affecting competitiveness including macroeconomic environment, financial services, skills, infrastructure, institutions and technology.

The trend in overall competitiveness of Bangladesh as measured by the GCI in relation to its competitors is illustrated in Figure 10. Although the number of countries covered in the surveys between 2008 and 2019 has changed slightly from 134 to 141, the relative cross-country rankings within a year are not affected. Also, the inter-temporal trend showing relative progress across countries provides useful insights.

Figure 10: Global Competitiveness Index (Ranking)



Source: GCI, World Economic Forum 20019 and 2008-09

The two main messages conveyed by Figure 9 are that: first, the competitiveness of the Bangladesh economy relative to competitors remains a serious challenge. China, Indonesia, India, Vietnam and Sri Lanka are much more competitive than Bangladesh. And second, between 2008 and 2019 Bangladesh has made some progress with improving its competitiveness, but China, Indonesia and Vietnam have also improved so, while the relative gap has been closed a little, Bangladesh remains way behind these more competitive economies. An interesting result is the substantial relative weakening of competitiveness in India and Pakistan. India's performance was ranked relatively highly in 2008, but it seems to have lost ground over time and its ranking was downgraded substantially in the 2019 GCI rankings. The main areas where India lost ground include: human development, technology, labour market efficiency and business dynamism. Nevertheless, it is still way ahead of Bangladesh. The one exception in competitiveness performance is Pakistan. In 2008 Pakistan was well ahead of Bangladesh, but its performance deteriorated sharply over the past 11 years and has now fallen behind Bangladesh. This is a positive result for Bangladesh but it has a lot of ground to cover when compared with more dynamic economies.

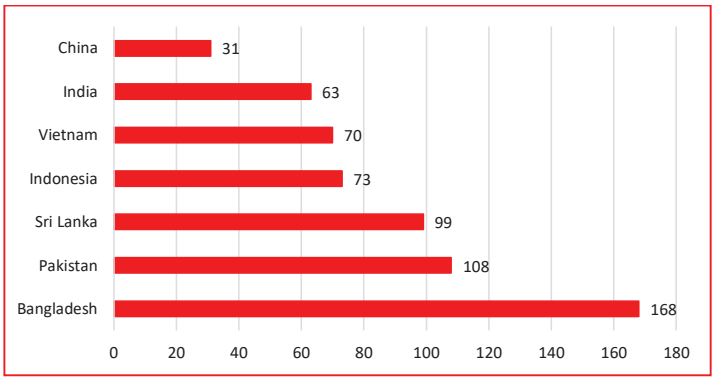
When the various indicators are considered, Bangladesh gained most ground on infrastructure development (power supply) and technology owing to the progress on the ICT front, but lost substantial ground on macroeconomic management and financial sector system. This is a signal that international investors are worried about the fragility of the emerging macroeconomic environment and the health of the financial system that must be addressed speedily.

4.2 Doing Business Indicators

The cost or ease of Doing Business (DB) indicators prepared by the World Bank are a more direct measure of investment climate because they incorporate in much greater depth all major factors that enter the investment decisions of private investors as compared with GCI that is more aggregative and broad-based measure. The DB indicators are very helpful to measure the progress with deregulation in terms of results on the ground, and not just regulations in the books, and as such they reflect both the regulatory gaps and associated implementation challenges.

The DB indicators provide an overall ease of doing business index ranking as well as rankings for each of the 10 regulatory areas that affect business decisions. The overall DB index for 2019 for Bangladesh and comparators based on 190 countries is indicated in Figure 11.

Figure 11: Doing Business Rankings 2020 (out of 190)



Source: World Bank Doing Business Database

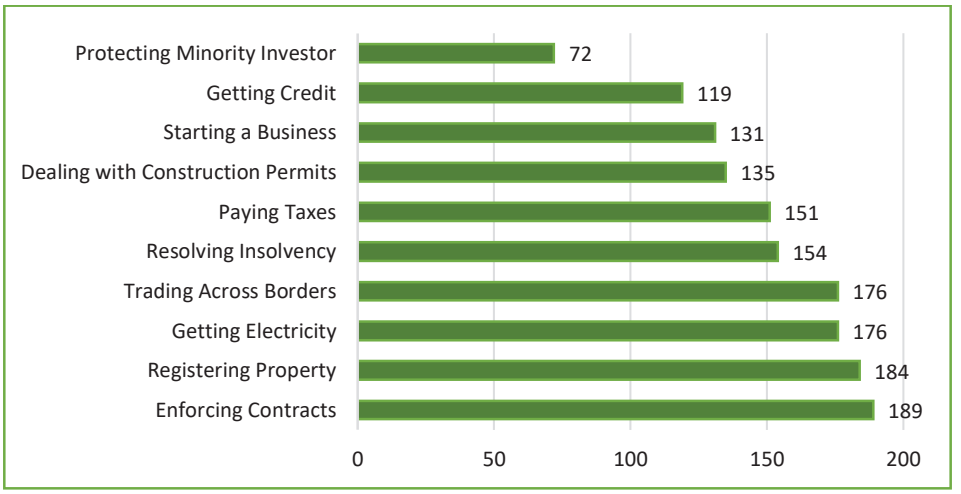
There are two major implications of this comparison. First, despite past progress, the regulatory environment in Bangladesh is substantially less favorable than competitors; it is ranked at a low score of 168 out of 190. Second, according to DB rankings, all other countries in the comparator list have a relatively better regulatory environment than Bangladesh. Some progress with improving the regulatory environment was made by Bangladesh in 2019. This resulted in an improvement in ranking from 176 to 168. This is welcome progress, but the gap in performance with competitors remains substantially large.

A comparison of the results illustrated in Figures 10 and 11 shows that while the regulatory environment is an important determinant of the investment climate and competitiveness of an economy, it is only one determinant. It is also important to pay attention to such other factors included in the measurement of GCI as the macroeconomic environment, labor skills, infrastructure, technology, institutions and innovation. Progress in these other areas can compensate for the higher transaction costs of negotiating the regulatory environment while weaknesses in these other areas can strongly offset the regulatory ease of doing business. Thus, while Pakistan has better regulatory environment than Bangladesh (has better performance rank in DB), its macroeconomic performance is much weaker than Bangladesh (gets lower rank in GCI). Similarly, despite excellent DB scores, India lost ground under GCI because of slowdown in growth and other macroeconomic concerns.

Nevertheless, the inescapable conclusion is that the overall investment climate for private sector is weak in Bangladesh by both measures (GCI and DB) and the best approach to reforming policies for improving the investment climate is to focus attention on both the regulatory environment as well as the other enablers.

Drilling down the composite DB index by its 10 individual components provides substantial insights of where the main regulatory constraints bite most. The Bangladesh 2020 rankings by components are shown in Figure 12. The four biggest constraints identified by DB survey responders in Bangladesh are: enforcing contracts, registering property, getting electricity and trading across borders. The low ranking in these areas, especially in regard to enforcing contracts and registering property, puts Bangladesh at near the bottom 10% of the global list of countries. Resolving insolvency and paying taxes are also problematic and involve substantial transaction costs.

Figure 12: Bangladesh Key Regulatory Constraints to Private Investment 2020 (Ranking, 190 Countries)



Source: World Bank 2019.

Several examples of the implications of low ranking for the ease of doing business can show why these constraints matter. The compliance time and costs are both important determinants of transaction cost for business and their competitiveness.

First, on average it takes 4 years to resolve an insolvency case in Bangladesh as compared with 2.2 years for South Asia on average and 1.7 years for OECD countries. The recovery rate of the claim is only 29% as compared with 38% for South Asia and 78% for OECD countries.

Second, it takes 1442 days in Bangladesh to enforce a contract and the financial cost of enforcement is as high as 67% of the claim. As compared with this, it takes 590 days in OECD countries and the cost is only 22%. For South Asia, the average number of days is 1102 and cost is 30%. In China it takes 453 days and the cost of compliance is a low 16%, while Vietnam takes only 400 days and the compliance cost is slightly higher at 29%.

Third, the difficulty of getting access to electricity is equally telling. Even after recent reforms, it still takes 115 days to get access to electricity in Bangladesh as compared with 58 days in Indonesia and 46 days in India and Vietnam. Additionally, the relative cost of getting electricity measured as percentage of per capita GDP is much higher in Bangladesh relative to comparators.

Third, regarding, property registration, Bangladesh takes 264 days while it is an average of 108 days for South Asia and only 24 days in OECD countries. In China it takes only 20 days, 27 days in Indonesia, 47 days in India, 51 days in Sri Lanka and 58 days in Vietnam.

Finally, concerning trading across borders, the time it takes to complete international trade transactions and the financial cost of complying with the documentary and border clearance requirements are very high relative to the average for South Asia and OECD countries (Table 4). This is a particularly worrisome result for export diversification.

Table 4: Transaction Cost of Trading Across Border

Indicator	Bangladesh	South Asia	OECD high income
Time to export: border compliance (hours)	168	53.4	12.7
Cost of export: border compliance (USD)	408	310.6	136.8
Time to export: documentary compliance (hours)	147	73.7	2.3
Cost to export: documentary compliance (USD)	225	157.9	33.4
Time to import: border compliance (hours)	216	85.7	8.5
Cost of import: border compliance (USD)	900	472.9	98.1
Time to import: documentary compliance (hours)	144	93.7	3.4
Cost of import: documentary compliance (USD)	370	261.7	23.5

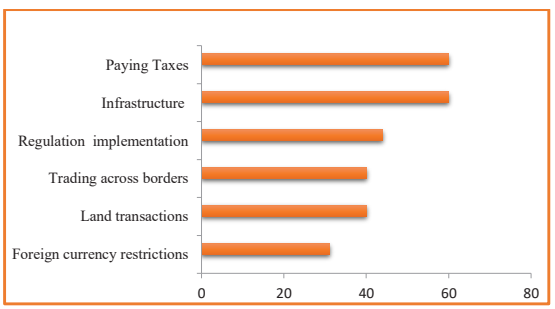
Source: World Bank 2019b.

4.3 Findings of PRI 2017 Survey of Business Constraints in Bangladesh

At the request of the Metropolitan Chamber of Commerce and Industries (MCCI) of Bangladesh, the PRI conducted a major research in 2017 to understand the constraints affecting business decisions in Bangladesh (Ahmed and Alam 2017). Some 16 top MCCI entrepreneurs were interviewed to get a reading of their concerns based on direct day-to-day experiences in doing business in Bangladesh. Due to time constraint, only a limited number of interviews were possible. But care was taken to get feedback from a cross-section of business including exporters, non-RMG manufacturing, agro-processing and service sector enterprises. The responses were compiled in a way that they are consistent with the approach suggested by the World Bank DB surveys. The top 6 constraints identified by these entrepreneurs are shown in Figure 13.

There is a substantial positive correlation between DB-identified constraints and the constraints identified by the MCCI representatives. One difference in the sample is that the MCCI respondents are only Bangladeshi entrepreneurs. The MCCI business representatives tend to be elite business leaders of Bangladesh who are well-connected and are able to find ways to work around the legal system. As a result, constraints relating to contract enforcement and bankruptcy did not get much attention. The two most important constraints identified by MCCI representatives are paying taxes and infrastructure, followed by implementation of regulations, land procurement, trade policy and foreign currency regulations. The emphasis placed by MCCI entrepreneurs on trade policy and foreign currency regime suggests the growing importance of international linkages between Bangladesh and the global business.

Figure 13: Top 6 Constraints Identified by MCCI Members



Source: Compiled from MCCI Survey 2017

Drilling down the specifics of the constraints provides a good understanding of how they affect the business environment and decision making

Paying Taxes: Somewhat surprisingly, the tax regime emerged as the biggest constraint to the MCCI entrepreneurs. This constraint was also rated very unfavorably by the much larger DB survey illustrated in Figure 12, but it was ranked at 6th place out of the top 10 constraints. Several specific concerns about the tax regime include: complex corporate tax system; high marginal rates; tax harassment and corrupt practices; poor functioning of alternate dispute resolution (ADR); tax payments problems involving foreign experts; problems applying tax holidays (e.g. in relation to waste management and recycling); inefficient audits; arbitrary tax assessments; problems with resolving tax disputes; difficulties in getting tax rebates and refunds. Some of the specific ways the tax regime hurts business decisions are illustrated in Box 1.

Box 1: Illustrative Examples of the Tax Regime as a Constraint to Business

***Case 1: Tax on technology transfer**:* The technical skills for designing shoes according to the latest global designs are not available in Bangladesh. In order to remain globally competitive in the global market, expertise from abroad usually needs to be hired. However, industries are discouraged from acquiring foreign technology as there is a 20% tax (this used to be 10% before) withheld at source on the technology service provider. The foreign provider passes on this tax to the domestic shoe company hiring the services for technology transfer/innovation, effectively making it a tax on innovation. This applies to all industries that are trying to invest in innovation and technology transfer. There are also other costs associated with remitting the technical know-how income. If the remitted income is more than 8% of net profit/loss (after accounting for all costs and expenses), then the additional amount will be added to annual income/loss and taxed at a rate of 37.5% - thus not recognizing this amount as expense but as income.

Case 2: Over milking the cash cows: The NBR assumes that the higher the taxes a company pays, the more the company evades taxes. In this context a leading company, which did not come under LTU purview based on their returns was targeted by LTU and for one year NBR officers got stationed in their premise, although after the end of the year the tax outcome did not change and NBR found out that the company did not meet the LTU criteria. More generally, NBR efforts seem to be mainly focused on the companies that comply with tax regulations instead of focusing attention to increase the size of tax net. In another example, a footwear manufacturing firm was charged taxes based on the number of bank transactions made by that firm, though it should be based on profits.

Case 3: The curious case of tax holiday application to plastic waste management: NBR provides tax holidays (Section 46B) for recycling and waste management. However, in the case of recycling plastics to raisins there is discrepancy in the wordings of the section related to it between the Bengali and the English versions of the law. In the Bengali version, companies can enjoy the tax holiday for this activity but the English version does not allow this. While under Bangladesh law the Bengali version should prevail, the NBR official accept the English version. When challenged, a leading company was asked by NBR to go to court and have it solved.

Against the backdrop of this situation, the Ministry of Commerce (MoC) provides 20% cash incentives to export crushed plastic bottles. There is not much demand for crushed plastic bottles and as a result even with cash incentives only $60 million was exported and it is not growing. On the other hand, Bangladesh is now importing raisins worth $600 million annually for its growing plastic industry. Given the huge supply of wasted plastic materials, including bottles, if NBR allowed the tax holidays as per the stated policy these could be easily converted to industrial grade raisins and used for the growing demand from plastic industries.

Source: MCCI Survey, 2017

Infrastructure: The negative role of infrastructure constraint on business is well known. While the government has taken many steps including large investments in power, bridges and road network, the infrastructure deficiency relative to needs remains large. In addition to the supply constraints, there are weaknesses in service provision that require serious attention. Some of the specific concerns identified by the MCCI respondents include: lack of transparent policy on gas connections; high transaction costs for getting access to power and water connections in terms of time and money; heavy traffic congestion; high cost port services in terms of time and money; inadequate land port facilities; inadequate air cargo facilities; weaknesses in inter-modal transport coordination and connectivity, especially in regards to link between port and factory through rail and inland water ways. Some indicative examples of the infrastructure constraint based on the experience of MCCI members is shown in Box 2.

Land Procurement: The procurement of land is emerging as a binding constraint to the expansion of manufacturing enterprises, especially in the capital city of Dhaka and the commercial city of Chittagong. The government is trying to resolve this by establishing special economic zones (SEZs). This is a smart move but implementation is slower than necessary. There are major constraints that impinge on the proper functioning of the land market that will have to be addressed to allow land acquisition in non-SEZ locations as necessary for business. These include: poor land records; high transaction costs of land sales and registration in terms of time and money; high land prices; land ceiling on agriculture that hurts commercial agriculture; and inadequate support to developing SEZs based on private sector participation.

Box 2: Illustrative Examples of the Infrastructure Constraints

Case 1: The mirage of gas connections: Jalalabad Gas Ltd. gave the permission to a company to acquire supply of additional gas needs after expansion, on the basis that it was a good existing customer. All the permissions were received two years back on the basis of which machineries have been imported. However, in a recent order the government stopped all new gas connections including those for which permission was given. As a result, the factory could not yet be commissioned. Meanwhile, the management is trying to get an exception from government as a similar case was given recently. All these is adding cost to the company, which may even have to go to court if favorable decision is not given by government.

Case 2: Inadequate air-cargo capacity: Industries use air freight as a last resort given the high cost. Yet, the capacity of the cargo terminal at the Dhaka airport has not improved much over the decades. There are huge stacks of shipment lying at the cargo terminal of the Dhaka airport. Most of these goods are lying under the open-sky and is either getting stolen or getting damaged. The amount of unclaimed shipment is also increasing due to certain reasons. Firstly, as there has been an increase in security measures at the airports, C&F agents are not allowed inside. Secondly, due to outdated customs laws, many importers of raw materials try to manipulate the HS codes to pay lower duties. But when they fail to do so, they leave their import shipments unclaimed. Thirdly, when importing samples, companies should be able to get these in 2 days but it usually takes 2-3 weeks due to lot of bureaucratic hassle by the customs authorities at the airport. A lot of samples are usually missing and are stolen. Finally, there have also been cases where Active Pharmaceutical Ingredient imported by pharmaceutical companies has been replaced by some totally different material.

Source: MCCI Survey, 2017

Trading across borders: The trade-to GDP ratio in Bangladesh has been growing progressively as Bangladesh gets better integrated into the global economy. The transaction costs related to international trading has therefore become a major factor for the competitiveness of the Bangladesh economy. Echoing the concerns in the broader DB survey of ease of doing business, the MCCI entrepreneurs also identified the rules and regulations surrounding importation and exportation as a serious constraint to private investment and growth of business. The main issues include; high trade protection creating bias against exports; bonded warehouse facility either not available to other exporters or available only on a limited basis with considerable implementation hassles; import laws often unduly complex, especially for agro-processing; and customs clearance process is time consuming and expensive.

Implementing regulations: Notwithstanding the progress made in deregulating trade, finance and investment noted earlier, there are still too many government regulations that add to the transaction cost of doing business. Importantly, the implementation of these regulations tends to be cumbersome, discretionary and can be financially expensive for business. Some of the specific issues raised include: the complexities in land procurement and imports tend to disable and hurt business development; lack of coordination between political decision-making and implementation at the bureaucracy level; policy unpredictability; discretionary application; weak implementation capacity in line ministries and agencies (e.g. Drug administration, environmental certifications; labor laws); long implementation delays; onerous customs clearance process; and poor certification quality of public labs. A few examples of this constraint are contained in Box 3.

Box 3: Illustrative Examples of Regulatory Problems and Implementation

Case 1: Lab testing delays: Lab testing of containers after arrival at the ports is mandatory and is a costly and time-consuming process. Testing of containers can take up to 8 to 10 days. As a result of the delays, there are high demurrage costs incurred. In addition, lab testers often need to be bribed to give a good report and evaluation of the shipment.

Case 2: Cumbersome customs clearance procedures: All costs in the Chittagong sea port are determined on a per container basis. In addition to import duties, a high amount of unofficial costs needs to be paid for unloading and handling of the raw materials. Every entity involved in the sea port starting from the customs officials, port authorities to the crane operators demand a fee. Ceramic raw materials can also be competitively imported from Thailand and Malaysia, who can ship the raw materials using barges. But because the cost of clearance at the Chittagong sea port is very high it discourages ceramics manufacturers to import raw materials from these countries.

Case 3: Uniform ETP standards despite differential needs: Different industries have different pollution levels –pollution by tannery and dyeing industry is much higher and intense than something like a paper mill. However, for pollution control, the same sorts of effluent treatment plants (ETPs) are used. A new paper mill set setup by a paper mill company remains closed because it cannot meet the ETP standards, which are much larger in size compared to what would otherwise be needed for paper mills.

Case 4: Weak Drug Administration capacity: Regulations and enforcement of quality standards by the Drug Administration department is inadequate. Drug exports require very stringent quality assurance tests by outside agencies, like the USFDA. This is a costly and involves a long-drawn process to pass through those processes. If the Bangladesh Drug Administration capacity was of good standard then lot of these process costs could have been avoided. Besides even for the domestic market there needs to be a strong Drug Administration in order to ensure right quality drugs get produced and marketed domestically

Source: MCCI Survey, 2017

Antiquated foreign currency regulations: As Bangladesh economy gets better integrated into the global economy, the importance of having an enabling foreign exchange regime grows substantially. Unfortunately, the regulator of foreign currency, the Bangladesh Bank (BB) still functions as a controller of foreign currency rather than an enabler of business transactions within a prudent foreign exchange regime. This legacy of controls and rationing of foreign currency inherited from the desperate economic times immediately after independence has been very slow to change notwithstanding the sea change and sophistication in private business. As a result, there excessive restrictions on foreign currency transactions for business purposes including retention of foreign earnings; opening of bank accounts in foreign currency; and foreign currency payments.

5. Private Investment Targets for the 8th FYP

The investment challenge facing the 8th FYP was noted in Table 2. Detailed projections under the Macroeconomic Framework for the 8th FYP yields the targets for private investment that are shown in Table 5. These are indicative targets but they are consistent with GDP growth targets, the projected ICORs, the public investment rate emerging from the fiscal framework and foreign financing needs of the balance of payments. Shortfalls in public investment and higher ICORs will further intensify the private investment requirements of the 8th FYP. Shortfalls in FDI will require domestic private investment to increase and additional loan financing will be needed to meet the financing needs of the BOP. The important point to note is that, as in any consistent macroeconomic framework, the investment financing plan is inter-linked with other macroeconomic accounts.

Table 5: Private Investment Targets for the 8th FYP

Indicator (% of GDP)	FY2021	FY2022	FY2023	FY2024	FY2025
Total Private Investment	25.2	25.9	26.6	27.3	28.2
Private domestic investment	23.5	24.0	24.5	24.8	25.2
Foreign Direct Investment	1.7	1.9	2.1	2.5	3.0
Foreign Direct Investment (US$ bl.)	6.1	7.6	9.4	12.3	16.4

Source: Macroeconomic Framework for the 8th FYP, GED Projections

The projected private investment rates are high but achievable in the context of Bangladesh's potential. Nevertheless, as suggested by the experience during the 6th FYP and 7th FYP these will present tremendous policy challenges. As noted, the domestic private investment rate has grown substantially from the low levels of the 1990s but it grew much slowly during the 6th and 7th FYP, growing by about 2 percentage points over the past 10 years. If the fundamental investment constraints reviewed in Section 4 are addressed with determination, the projected 4 percentage point of GDP increases in the private investment rate over the next 5 years of the 8th FYP is certainly within reach.

The main potential for private investment rate increase lies in mobilizing FDI. As noted, the total availability of FDI in the developing world is huge at around $750 billion. There is no reason why Bangladesh cannot meet its modest target of mobilizing $16 billion per year by the end of the FY2025. The number looks huge, but it is only 2% of the available pie and Vietnam is already mobilizing FDI that this is close to this amount. This is the area where most policy attention should concentrate. With the appointment of a Special Advisor for the promotion of foreign private investment and the consolidation of the various foreign private investment mobilization institutions under the Special Advisor's supervision, the

FDI coordination task has been streamlined. The main challenge moving forward is to quickly put together a time-bound action plan and monitor its implementation based on the policy recommendations provided in Section 6.

6. Policies for Improving the Private Sector Investment Climate under the 8th FYP

The policies for improving the investment climate for private investment are indicated by the investor responses to GCI, DB and MCCI surveys. The MCCI survey responses are particularly useful because they emerged from elite investors doing business in Bangladesh, who are well-connected and understand the political economy of Bangladesh. The fact that their views and concerns are broadly consistent with the concerns note under GCI and DB and also consistent with what one would expect from the economic theory of investment is reassuring. This suggests that reforms that are advocated will likely have a positive supply response as they reflect the ground reality in Bangladesh and are not derived from abstract theoretical models. The main reforms include: improving macroeconomic management; banking sector reforms, trade policy reforms; streamlining regulatory policies and improving their implementation; strengthening infrastructure policies; liberalizing the foreign currency regime; and policies for skills development.

6.1 Restoring Macroeconomic Stability

The most urgent reform is to restore macroeconomic stability by addressing the tax revenue concerns, slowdown of exports and the health of the banking sector. The results of the first 5 months of the macroeconomic outturn is shown in Table 6. Tax revenues and export growth have plummeted, government borrowing from the Bangladesh Bank has surged and there are signs of an emerging pressure on inflation. These short-term outcomes are an indication that the macroeconomic management is under stress and must be quickly arrested and reversed. The tax revenue out-turn is particularly worrisome because tax performance was weak in FY2019 as well.

Table 6: Macroeconomic Challenges in FY2019-20

Indicators (percent)	FY2020 Budget Target	July-November 2019	July-November 2018
Tax revenue growth (over revised Budget for FY2019)	17.4	4.33	6.79
Tax revenue growth (over actual tax collection in FY2019)	45.6	4.33	6.79
Growth of government borrowing from Bangladesh Bank		35.46	3.05
Growth of exports (nominal US$)	13.9	(-) 7.6	17.24
Inflation rate (annualized)	5.5	6.05	5.35

Source: Bangladesh Bank Selected Economic Indicators

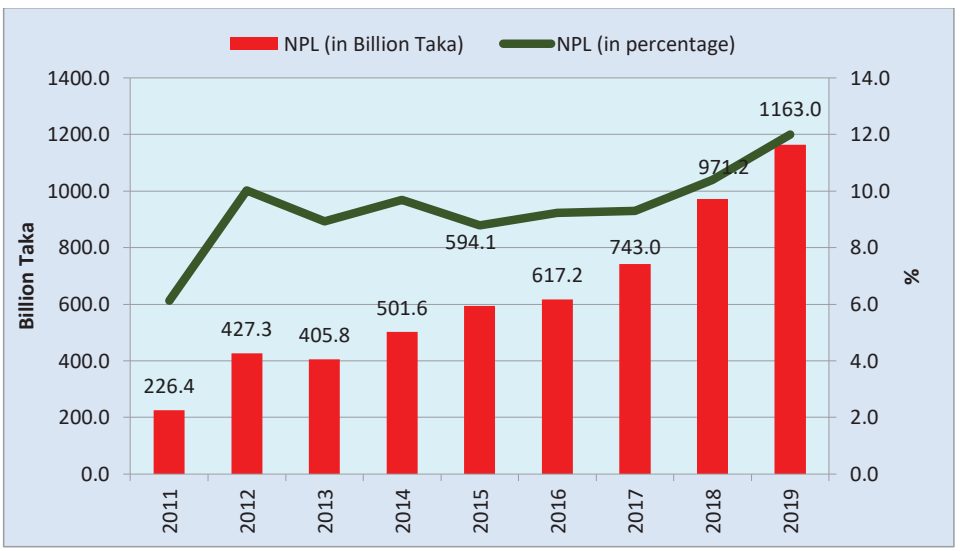
The PP2041 macroeconomic strategy and the associated macroeconomic framework for the 8th FYP calls for a substantial increase in the tax effort, rising from around 9% of GDP in FY2019 to 15% of GDP by FY2025. This tax strategy must be quickly implemented. The main reforms include an overhaul of tax administration, implementation of the 2012 VAT Law, reduction in corporate tax rates, digitization of tax filing and tax collection, removal of most tax exemptions, selected and productive audits, and reduction of trade protection (Ahmed 2019). Regarding export growth and diversification, most the important

macroeconomic reform is the reversal of the sharp appreciation of the real exchange rate (Ahmed and Sattar 2019a). The government recognizes the importance of exchange rate for export competitiveness. But instead of offsetting the appreciation of the real exchange rate through an adjustment of the nominal exchange rate, it offers cash subsidies and exchange rate incentives to selected exports and remittances. The fiscal cost of this policy is large and its overall effectiveness in promoting export diversification is doubtful (Ahmed and Sattar 2019a).

6.2 Improving the Health of the Banking Sector

As noted, the performance of the banking sector has come under serious stress over the past several years, manifested in a weakening of the capital adequacy of public banks and a rise in the incidence of NPLs for both public and private banks. In absolute terms, the volume of NPLs have reached Taka 1163 billion (4.6% of GDP) that presents a serious risk to the financial health of the banking sector (Figure 14). Additionally, recent controls over interest rate has turned deposit rates negative in real terms that has adversely affected the growth of deposit mobilization. A combination of high NPLs and low deposit mobilization can create liquidity and profitability problems for the banking sector, which can sharply lower the effectiveness of this important enabling service for private investment, exports and GDP growth (Ahmed 2020).

Figure 14: Net Performing Loans (NPL) for Bangladesh



Source: Bangladesh Bank

The banking sector deregulation in Bangladesh since 2000 has served the country well and this progress needs to be consolidated with further improvements in the quality and efficiency of banking services. The reforms will have to be real that goes to the root causes of the emerging banking sector weaknesses describe in Section and seek to address them comprehensively and in a sustained manner. Efforts to delay the implementation of the Basel Accords or to change accounting practices to hide the NPLs and regulatory capital deficiencies will be futile and further hurt the health of the banking sector. This can seriously compromise the government's ability to achieve the PP2041 target.

The bank reforms have successfully limited the role of poor-performing public banks. But, with a large infected portfolio and continuous need for support from the Treasury to stay in business, these banks cannot function as presently. They already present a huge contingent fiscal liability to the Treasury in an environment of low tax revenues. Political interventions in private banks are also a source of concern that is creating financial difficulties in a number of private banks. This must be forcefully addressed to avoid creating major headaches for the health of the banking sector.

At the very top of the reform list is the need for autonomy of the Bangladesh Bank. The Government should carefully review the issue of the independence of the Bangladesh Bank and the amount of autonomy it wants to convey to the regulator. There is clear evidence from international experience that an independent Central Bank is necessary to move into UMIC and HIC status. This is an essential institutional reform pre-requisite for achieving the targets of the Perspective Plan 2041 (PP2041). A fully autonomous regulator that can hire quality staff it needs, procure the technology it requires to strengthen its effectiveness, and implement prudential norms without the fear of political influence is essential to prevent inefficiencies and corruption in the banking sector. An autonomous Central Bank is also necessary to conduct sound monetary policy management and to exercise utmost prudence in such matters as the licensing of new banks.

The positive experience with better supervision of banks leading to adoption of Basel I and II is a reflection of the importance of continuously improving high-quality supervision. The Government should also rethink the strategy for the supervision of public banks. In addition to efforts to improve their performance, these banks must be brought under the full regulatory supervision of the Bangladesh Bank and must be required to comply with all prudential norms, including certification of the bank boards and senior management as per the approved fit and proper criteria. The Government must understand that it cannot both be a producer of banking services (as owner) and also a regulator of these services. This is a serious conflict of interest that must be corrected.

Over the longer term the Government should reassess whether it really needs be in the business of providing banking services. There is plenty of international evidence that publicly owned banks do not perform well in an environment of weak governance. The quality of portfolio inevitably gets tainted owing to political interventions that are inconsistent with sound banking decisions. The first best option is to privatize the state-owned banks.

In a political environment where privatization is not imminent, there is a second-best approach that might work. Public banks tend to have an unfair advantage in mobilizing deposits because of the perception of state guarantees and de-facto immunity from effective supervision. Because of these concessions, state-owned banks are able to stay float even with very poor loan portfolios and inadequate regulatory capital. The adverse implications of poor lending decisions could be tackled by taking away the lending functions of these banks. If such banks are allowed to only hold government paper, their deposit growth would be indirectly limited and sounder banks would intermediate more flows. Importantly, the deposits mobilized will be safe and not exposed to risks of the type presented by the various banking scams and thefts.

Such lending restrictions are akin to a “dual banking system” with “narrow banks” that are likely to remain state-owned (and only allowed to gather deposits to invest in government

paper) and conventional private sector banks. No new laws are required because the government as owners of the public banks could take this decision.

The idea of narrow bank is not a new one and merits serious attention (Ahmed, et. al. 2003). At the least the Government might ask the Bangladesh Bank to review this option carefully and provide a technical proposal. The Government must understand that it already faces a very tight fiscal situation and it cannot absorb yet another fiscal shock from a potential liquidity crisis in public banks emerging from an overload of infected portfolio.

Bangladesh should seriously rethink its approach to interest rate policy. The interest rate management has been unstable with periods of relaxation and then followed by tight control. As a result, the real deposit rate has often been negative. This is presently the case where the real deposit rate has been negative for past several years and the rate of growth of bank deposits has been falling significantly. A slow-growing deposit base in the face of rising NPLs could create serious liquidity and profitability problems for banks that could lead to financial disintermediation and hurt growth. It could also hurt the stability of the banking sector that must be avoided.

Since Bangladesh is aspiring to move to UMIC and HIC in the next 20 years or so, it is appropriate that instead of pursuing a control-oriented and frequently switiching interest rate policy, Bangladesh should adopt a proper market-driven interest rate policy that is linked to the Treasury bills. The market for Treasury bills should be opened up for private trading, which will then set a benchmark for other interest rates. Monetary policy can then be pursued by BB through the supply and demand for T-bills. This would modernize interest rate management and offer savers a major secured financial asset. This would also facilitate deposit mobilization as banks compete with each other through attractive financial products.

6.3 Eliminating the Anti-Export Bias of Trade Policy

Along with the adjustment of the exchange rate the most fundamental reform needed to boost export growth on the basis of a diversified export base is to lower and eventually eliminate the anti-export bias of trade policy (Ahmed and Sattar 2019b). Although customs duties have been substantially lowered from the very high levels prevailing in the 1980s and 1990s, much of their beneficial effects occurred in the first phase of trade reforms that ended around 2000. The second phase of trade reforms after 2000 never took off in any meaningful sense. Instead, there has been some reversal. The positive effects of lower trade protection from reduction in custom duties have been more than offset by the introduction of a range of regulatory and supplementary duties that are often varied on a yearly cycle (Ahmed and Sattar 2019b). This not only raises trade protection but also contributes to the unpredictability of the trade protection regime, which complicates private investment decisions. The importance of trade reforms gains added significance in the light of the expected graduation of Bangladesh from the list of LDC countries. Bangladesh will lose access to a number of special trade concessions given to LDCs, of which access to the European Unions' duty free "All but Arms" (EBA) facility has been a great advantage for RMG exports. Bangladesh, therefore, must prepare to increase private investment in a range of non-RMG exports and the incentive regime is critical to this. Additionally, Bangladesh will need to adhere to all WTO regulations relating to trade tariff and subsidies once it graduates from LDC status. On both counts, the reform of the trade tariff and subsidy regime is absolutely critical.

The main challenge is to lower overall trade protection and especially the protection on consumer goods by phasing away the large number of supplementary and regulatory duties, and lowering the upper bound and dispersion of custom duty rates. Detailed reform options are incorporated in the recent government report on LDC graduation (Government of Bangladesh 2019b) and also available in Ahmed and Sattar (2019b; 2019c).

6.4 Overhauling the Regulatory Regime and Improving its Implementation

The continued high transaction costs in key areas of policy making affecting business decision even after significant deregulation since the 1990s are indicative of an important aspect of the weakness of the private sector regulatory environment that has not received adequate attention. Much of the effort so far has focused on deregulating and simplifying bureaucratic interventions in private investment decisions. But there are a number of areas where investment facilitation requires enabling regulations and enforcement. The inadequacy of the legal framework for contract enforcement and resolving insolvency are two primary examples of the absence of appropriate enabling regulations. Another important area is labor protection laws. However, the low overall DB ranking is also indicative of the fact that most other countries have moved much faster than Bangladesh in simplifying the regulatory regime and lowering the transaction costs. The relative stagnation in the private investment rate despite favorable macroeconomic performance, low-cost labor and robust economic growth are indicative of the persistent investor concerns with the business environment that has made progress but falls short considerably in relation to reforms in other countries.

Based on the results of DB and PRI surveys, the top regulatory reform areas are: contract enforcement; getting electricity; property registration; trading across border. resolving insolvency and improving the tax regime. It is useful to classify these six regulatory constraints into two groups. The first group consists of areas where there is a need to establish effective prudential regulations. These prudential regulations concern the need to facilitate contract enforcement and resolving insolvency. The second group relates to areas where regulations are complex and need to be simplified. These concern simplifying regulations for getting electricity, for property registration, to facilitate trading across border, and making it easy to pay taxes.

Establishing prudential regulations: The problems relating to contract enforcement and resolution of insolvency are indicative of a number of factors including inadequate regulatory procedures, weak implementation capacity and lack of responsiveness in the concerned public agencies. The satisfactory resolution of these two substantive constraints through proper policy actions is imperative in order to modernize the regulatory framework for foreign private investment in Bangladesh. There is an urgent need for the government to first review the legal framework to check the adequacy of these two important enabling regulations in light of international good practice. Based on that review, appropriate actions have to be taken to streamline and strengthen the related regulations. This is a first step. The other important reform is to ensure that adequate administrative and legal procedures are in place to enforce the sound implementation of these regulations. Once again, the government can learn from the experience of good practice examples how business disputes are resolved and how bankruptcy proceedings are implemented. This review can then inform what actions are needed to enforce proper implementation, including whether there is a need for separate legal entities to resolve business disputes.

Simplifying regulations to lower transaction costs: The high transaction costs relating to getting electricity, registering property, trading across borders, paying taxes and undertaking foreign currency transactions are symptomatic of two generic major challenges facing Bangladesh. First is the mindset of controls inherited from the British and then the Pakistan colonial regimes. This is, for example, reflected in the fact that many laws and regulations in economic management still date back to the 19th century. Second, the public administration in Bangladesh has not improved as rapidly as the private sector and as such there is tremendous inertia, inefficiency and weak capacity in the implementation of regulations. An additional challenge is the rent-seeking behavior in public administration emerging from the complex regulatory regime.

Regarding getting electricity, recent efforts to reduce delays in getting electricity connections have paid off and the average number of days to get electricity has fallen sharply from 429 days to 115 days. This is a welcome progress but there is still a way to go. The government should set a target to lower the average lag between request and service delivery to below 50 days as found in India and Vietnam. The government should also require the concerned electricity distribution entity to establish service standards and monitor its performance.

Concerning property registration, the long delays and high cost are reflective of another binding constraint to private investment identified by MCCI respondents: the availability of land for manufacturing enterprises. The land market is very inefficient in view of weak land ownership data, lack of computerization of land records, poor zoning laws, and high transaction cost. On top, population pressure and rapid urbanization have contributed to a growing scarcity of urban land. As land prices have sky rocketed so have land disputes and various forms of corruption including land grabbing. The challenge for policy is acute and a resolution will take a long time. The government has responded by establishing Export Processing Zones (EPZs) and Special Economic Zones (SEZs) that seek to provide serviced land for manufacturing sector. This is a major policy response that is yielding positive results. The effort needs to be strengthened with timely completion of approved zones, transparent allocation of land parcels based on well-established criteria, and cost that reflects development costs and not rent seeking behavior. These land allocation rules and pricing policy must be put on the website of the concerned SEZ. A range of policy actions are also needed to improve the functioning of the land market including regulatory reforms to simplify land transactions and registration; institutional reforms to improve land administration and record keeping including digitization of land records; reduction in land sales and registration fees; and stronger mechanisms to enforce land use zoning laws (Alam 2015).

Regarding trading across border, since the 1980s there has been substantial simplification of international trade related regulatory policies and procedures. The quantitative restrictions have given way to customs and regulatory-duty based restrictions. The lower ranking on this count reflects the considerably longer delays in trade transactions and associated costs related to weakness of trade logistics (Sattar 2015). Much of the problem lies in internal transport between factory gate and the port. The Chittagong port's handling capacity has improved and port handling charges are less of a concern. But the inadequacies of the railway connection from Chittagong Port to factory destinations across the country and the road congestions on the major highways are of serious concern. The transport problem is a binding constraint to the acceleration of private investment that needs urgent resolution. The government has taken a number of initiatives to ease the problems, but progress with

implementation of railway reforms and completion of road projects are lagging behind substantially (Ahmed, 2015).

Paying taxes has emerged as a major bottleneck for private investment. This involves a range of issues regarding simplification of tax laws, lowering corporate tax rates, and improving administration (Ahmed 2019a). Time has come for a major overhaul of the income tax regime that is consistent with the budgetary needs of the government while avoiding disincentive effects on private investment. At the same time, there is a need to institute major improvements in tax administration capacity including professionalization of the National Board of Revenue, digitization of the tax collection process, improving NBR's research and planning capabilities, and converting it from a police-type heavy-handed institution to more of a service agency based on facilitating voluntary compliance and high-yield audits.

Using ICT solutions for service delivery: Improving public administration for service delivery will take time. Yet, some major improvements can be secured by adopting ICT solutions for service delivery. When processing and information needs are simplified through regulatory reforms, a speedy way of providing service delivery is by digitizing public service requests and delivery. This is already a government policy based on the adoption of Digital Bangladesh Initiative 2009 of Prime Minister Sheikh Hasina. Some progress has been made, but line ministries have adopted digitization solutions at different pace. The government should adopt a time table by which all permits, licenses and clearances requests and their approval should be done online. Well defined table lines for online service delivery must be established and its implementation monitored. An online quick-response grievance redressal system (GDS) must also be established. All tax returns, payments and refunds should also be digitized. This simple but powerful action can sharply reduce the transaction costs of the regulatory regime while also lowering rent-seeking behavior.

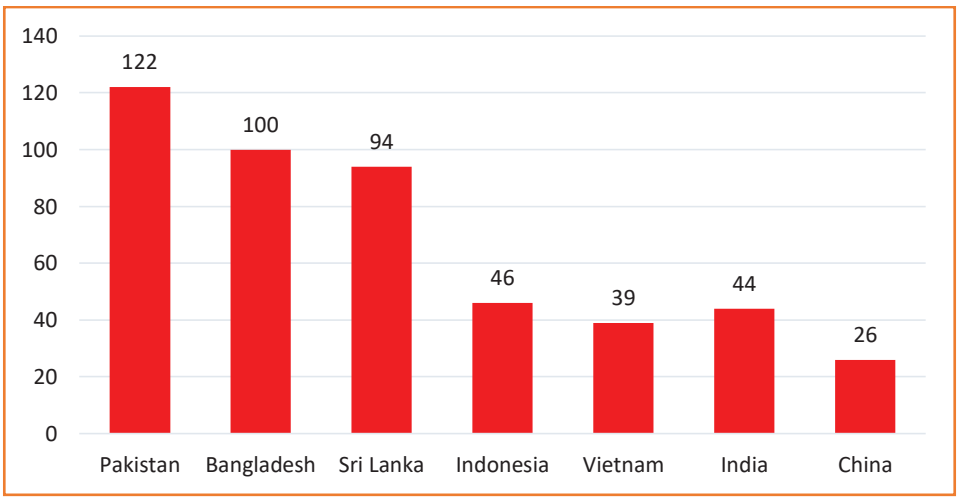
6.5 Strengthening Infrastructure Services

The GCI rankings showed that Bangladesh has made some progress in improving infrastructure services. Most progress has been made in increasing the availability and supply of electricity. Some progress has also been made on transport services, but as illustrated in Figure 12 above, Bangladesh transport infrastructure capabilities are way behind competitors. This is an important constraint on export diversification. Because of weak transport infrastructure and weak trade facilitation services indicated in Table 3, overall international logistic performance score is low as compared with major competitors (Figure 13) that puts Bangladeshi exporters at a considerable cost disadvantage over its competitors. The importance of improving international logistics will gain further significance as Bangladesh graduates from LDC status and loses access to tariff concessions. Along with better exchange rate management and lower trade protection, improvements in infrastructure and other determinants of international logistics will be the key to promoting private investment in exports leading to export diversification and associated higher growth of exports.

Infrastructure services are a major concern for domestic production as well. MCCI respondents identified this as the second most burning issue on their mind. While much of the focus was on transport infrastructure, gas supply and connection were also identified as major concerns. While Bangladesh has made good progress on the electricity front,

development and supply of primary energy remains a major challenge (Mansur 2017). Details of policy reforms needed for improving infrastructure services are well articulated in the PP2041 (Government of Bangladesh 2019b). The main challenge for the 8th FYP would be ensure their speedy and sustained implementation. The reforms include: better energy and transport service pricing policies; substantial investment in transport network; improving the inter-modal transport balance with greater emphasis inland on waterways and railways on port-to inland factory-gate connectivity; better O&M of transport assets; improvements in project implementation capacity of the transport ministry to ensure timely implementation of projects; facilitation of PPP based investments in transport network; speedy completion of urban mass transit projects; enforcement of traffic and parking rules and regulations in urban areas; improvements in port services including further containerization and electronic clearances; substantial investment in primary feasible energy supply including coal, LNG, new gas exploration, hydro-power, energy trade with neighbors, and renewable energy. The policy agenda is indeed long as reforms in the 6th and 7th plans have not been on track and as a result a considerable backlog has developed.

Figure 15: International Logistic Performance Index (LPI) Rankings



Source: World Bank LPI Rankings

6.6 Liberalizing the Foreign Currency Regime

In this 21st century globalized world of trade and financials, Bangladesh will seriously need to rethink its control-oriented and 19th Century-originated foreign currency regime. Even neighboring countries like India and Pakistan have moved with significant enabling reforms of the foreign currency regime but Bangladesh has lagged behind. There is often a confusion about what liberalization of the foreign currency regime means. Bangladesh policy makers tend to equate this with opening up of the capital account. This is not entirely correct. It is understood that Bangladesh will need to attract substantial foreign capital flows on a net basis and as such it will need to manage the outflow that will not make it feasible to institute a fully-convertible foreign currency and allow the associated free capital outflows. Within this broad framework of managing the capital transactions in a prudent manner, there is substantial scope for liberalizing the payment system over a number of years.

As a starting point, Bangladesh should remove the restrictions on payments by Bangladeshi residents for services purchased from abroad (e.g. restrictions on payments for education, medical services and tourism) based on proper documentation. Second, all regulatory barriers on the inflow of foreign service export earnings must be removed. Third, Bangladesh investors who earn foreign exchange should be allowed to use them for investment abroad with proper checks and balances. Fourth, foreign currency holders must be allowed the flexibility to encash their foreign currency in Bangladesh or transfer abroad using e-banking. All restrictions on foreign transactions through e-banking should be eliminated. Progressively as Bangladesh moves towards UMIC, the capital account restrictions will also need to be lifted in line with practices in other UMIC.

6.7 Building up the Skill Base of the Work Force

This is a fundamental long-term challenge that will take considerable time and effort. Both the quantity and quality of education system and training has to be enhanced. The reforms are well known and well-articulated in the 6th FYP and the 7th FYP. Significant progress has been made. Yet, there is a large unfinished agenda (Government of Bangladesh 2018a; Government of Bangladesh 2018b; Government of Bangladesh 2019a). The 8th FYP will need to draw the important lessons of past experience contained in these government documents and strengthen the reform implementation.

The most important reform is to substantially increase public spending on education and training from the presently low 2% of GDP to 3.5% of GDP by the end of the 8th FYP. Other reforms include: sharply improving public sector education service delivery by decentralizing primary and secondary education to the local governments; strong emphasis on teacher training and recruitment of qualified teachers; emphasis on maths, science and technology; compulsory ICT education at primary, secondary and higher secondary levels; sharp improvements in education buildings, lab equipment, materials and supplies; the curriculum and the exam system should put strongest emphasis on learning and problem solving instead of memorization; instituting public-private partnership in delivery of training; further encouraging private supply of tertiary education with needs-based government-funded scholarship programmes; the balance of public tertiary education should shift away from general education to technical education; and the University Grants Commission (UGC) should be substantially strengthened with highly-qualified leaders in education and given full responsibility for strengthening the quality of tertiary education along with associated accountability for delivery of results.

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Study 3

Digital Bangladesh, ICT Strategy and Knowledge Economy

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1. Background

Upon reaching low middle-income country status, Bangladesh has set targets to keep growing to meet development aspirations. Accordingly, the Government has adopted Vision 2041, a continuation of Vision 2021, to enable Bangladesh to reach the Upper Middle-Income Country (UMIC) status by 2030 and the High-Income Country (HIC) status by 2041. In the journey of keep uplifting per capita income from less than $2,000 now to over $12,000 by 2041, Bangladesh must keep expanding the value creation in economic output through ideas and knowledge. Graduating from the factor-driven stage to a knowledge-based economy—through both process and product innovation--should be the envisioned future for achieving the 2041 vision of Bangladesh. As explained in Appendix A, Digital Bangladesh and ICT offer the opportunity to Bangladesh to leverage ideas for accelerating growth as articulated by Prof. Paul M. Romer in his Nobel Prize-winning economic growth theory by articulating the role of technology as an endogenous factor.

The ICT has been the underpinning of Digital Bangladesh and the development of envisioned knowledge economy. Over the decades, ICT's humble beginning as computerization of information processing work, particularly within the office environment, and its recent progress in digitizing public services have been progressing towards the development of an idea-intensive knowledge economy. Notably, the technology stack driving the fourth industrial revolution (4IR) has a firm footing in ICT. More than a dozen technologies of the broader ICT family have been opening both opportunities and threats, which are transformative in nature, to Bangladesh's continued economic progress. At the cusp of the fourth industrial revolution, it appears that this 8th FYP is at a critical juncture in planning Bangladesh's journey to leverage as well as cope up with ICT driven digital economy.

In the outsourcing segment of the digital economy, Bangladeshi youths have been shining. Due to the cost advantage and proven delivery track record, small and large businesses from developed countries, like the US, UK, and Australia, are increasingly engaging freelancers from Bangladesh. According to Oxford Internet Institute (OII), Bangladesh has already become the second-largest supplier of online freelancing labor. It's being reported that about 500,000 active freelancers are regularly working out of 650,000 registered freelancers in the country. Estimated revenue from this freelancing outsourcing segment has already reached $100 million annually (Zaman, A., 2019). The high cost of mobile Internet data, often coupled with low speed, is a significant barrier to scale up this success, particularly in rural Bangladesh. Moreover, due to the meager per hour earning rate, despite having the engagement of a large number of freelancers, revenue generation from it does not appear to be attractive.

So far, Bangladesh has been leveraging low-cost labor and limited availability of raw materials to drive economic growth. Due to the limited availability of capital, Bangladesh's next wave of growth is supposed to originate from knowledge. The Knowledge Economy (KE) is a system of production and consumption powered by individuals, companies, and sectors that create and commercialize new ideas, technologies, processes, and products for the development of an economy. It happens to be that ICT offers the opportunity of adding ideas into both products and processes in producing economic outputs. The exploitation of this synergy should be leveraged to enter into the knowledge economy through the progress of implementing the Digital Bangladesh agenda.

Despite the progress, which is being made, as it has been observed in the midterm evaluation of the 7th FYP, GED (2019), "The global standards of the Knowledge Economy are far away from the present situation of Bangladesh. Bangladesh has performed as one of the low ranked economies in the World Bank's Knowledge Economy Index." Such reality indicates that the 8th FYP plan should target progress in key indicators measuring the strength of the digital and knowledge economy. So far, the progress has been a technology import-driven strategy in laying basic physical connectivity infrastructure, rolling out limited public services over digital channels, and offering low-value-added ICT outputs in the form of software, IT enabled services, and hardware assembling. To exploit the untapped potential, the 8th FYP should target to make significant progress in the ICT value creation through the capacity development for leveraging ideas.

The preparation of this background paper attempts to figure out the relevance of digital Bangladesh, ICT, and knowledge economy to the overarching development aspiration of the country. It reviews the progress made to date and explores new targets to be met by leveraging unfolding opportunities and devising strategies to leverage them.

1.1 Importance of Digital Bangladesh and Knowledge Economy for Bangladesh

Upon reaching the low middle-income status, Bangladesh has set the target to be a high middle-income country by 2030. To attain this economic status, here are three opportunities.

Increasing the role of knowledge and ideas in the economic output: The first one is about to increase the role of total factor productivity to existing productive activities, whether producing farming or manufacturing outputs. With the tremendous growth of component technologies, information technology appears to be in a solid position to support process innovation, often through retrofitting, for turning every productive activity to be a smart one. With the development of the IT/ITES industry, further process innovation solutions could be offered for upgrading existing productive activities for increasing the quality and reducing the cost of every product that Bangladesh produces now. As a result, existing economic activities will be more competitive, increasing both volume and value addition. Moreover, such process innovation competence will open new export market opportunities.

Increasing value addition in high-tech manufacturing: The second option is about expanding manufacturing in higher value-added segments. High-tech manufacturing is one of the options. With the growth of domestic consumption reaching more than a billion-dollar for mobile handset alone, the local market is sufficient enough to kick start the entry into high-tech manufacturing. It's understood that such a journey has already begun with the assembling of the imported component. As of January 2020, more than 60% of mobile handsets sold in Bangladesh carry Made in Bangladesh label. But extremely low-value addition is a concern. With intelligent policy interventions and investment in education as well as R&D, Bangladesh has the opportunity to increase value addition through component manufacturing and device innovation. Success stories of Vietnam and India are a good lesson for Bangladesh. But, the study of China's success in taking over India's mobile handset-making industry out of redesign strategy by beating India's labor and incentive-based one is worth considering for Bangladesh to take a lesson (Rokonuzzaman, 2020) for engineering a scalable success path.

On the other hand, the already demonstrated performance of local manufacturing of refrigerators and Televisions is an example to draw a lesson from to expand Bangladesh's

footprint into high-tech manufacturing, particularly for establishing a strong footprint in the export market. However, labor-centric value addition in similar local assembling in the past could not succeed in developing a sustainable industrial base. Furthermore, cash incentive-driven export success is not scalable either.

Expanding service for export: The growth of component technologies, device innovation, and the availability of broadband connections across the country are opening the opportunity of connecting firms as well as individuals to the global service value chain. Although the market in specific segments such as voice-centric call center services has been shrinking, opportunities are opening up in diverse directions. Internet of Things (IoT) is one of the enabling technologies in this regard. On the service front, elderly care through remote monitoring and teleported assisted devices and supervised teleportation of billions of IoT devices are opening an extremely high opportunity for Bangladesh to connect a portion of 50 million students to the global service value chain, forming the 3rd option.

Focus on development and trading of intellectual assets: Digital Bangladesh agenda primarily focuses on the Digitization of public services to address three indicators in public service consumption. These indicators are: 1. visits to be made by citizens in getting service from the Government, (ii) time it takes to deliver the services, and 3. the cost to be incurred by citizens. On the other hand, the ICT industry primarily focuses on offering connectivity, software, and services. The knowledge economy is about leveraging ideas for improving both products and processes to produce economic outputs. Upon attaining significant progress in connectivity, and public service digitization during the implementation of the 7th FYP, the focus of the 8th FYP should be on leveraging Digitization, and connectivity, for device, process, and software innovation capacity to address competitiveness issues, terming it as a digital economy agenda. For its role as the backbone of the digital economy, which depends on connectivity, efficiency, use of technology, innovation, and linkages within and across sectors, Bangladesh should focus on developing intellectual assets around Digitization for leveraging knowledge economy (Mukherjee, A. and Chawla, A. 2018).

2. Journey of Progression of Digitization Reaching Digital Economy and Fourth Industrial Revolution

At this phase of the 21st century, we are often baffled with diverse terminologies starting from Digitization, artificial intelligence (AI), the Internet of Things (IoT), to the fourth industrial revolution. Such terminologies raise critical questions. How are they related? Which one should we focus on first? Is there a way to make a transition from one to another? Or, is there a way to leapfrog?

The journey of benefiting from information technology has been progressing from computerization to artificial intelligence, often creating confusion and raising the temptation of leapfrogging. It appears that to benefit from higher-level Digitization such as AI, our journey should progress through a series of 07 maturity levels. In the absence of adequate maturity at lower levels, the investment made at a higher level runs the risk of failing to deliver the intended results. It's about creating economic benefits from innovations around digital technologies proceeding through maturity levels in a step-wise fashion. Here are a few maturity levels through which we should manage our journey in leveraging the digital economy.

i. COMPUTERISATION: During the latter part of the 20th century, we started experiencing the controlling of business or work processes through computers. To benefit from computerization, discipline was brought in work processes through business process reengineering exercises. To enable technology to take increasing roles, subjectivity was reduced. Among others, a set of policies was defined, standards of inputs and outputs were set, and often-redundant steps were reduced or eliminated (often giving the name of service simplification). As a result, transparency, clarity, and predictability increased, consequentially decreasing time, cost, and physical interactions. In the 1980s, Bangladesh made an entry in this journey with the personal computer.

ii. CONNECTIVITY: The first decade of the 21st century witnessed the rapid expansion of connectivity, mainly due to the expansion of mobile Internet penetration in developing countries. Like many other developing countries, the telephone density of Bangladesh picked up from less than 1 percent to over 80 percent, reaching 159.780 million at the end of March 2019 (according to BTRC) just over a span of 20 years. In addition to voice communication, mobile phone connectivity leveraging Unstructured Supplementary Service Data (USSD) also supported service innovation, notably mobile financial services. The advent of mobile Internet created a new dimension of service digitation: Apps economy. By leveraging this technology progression, Bangladesh has already made significant progress in public service delivery.

iii. INTERNET OF THINGS AND CONNECTED ECONOMY: Affordable coverage of mobile Internet has also opened the opportunity of turning existing industrial products such as utility meters, with innovated sensors as well as actuators, into connected devices with internet connections. They are called the Internet of Things (IoT). According to Statista, the global installed base of IoT devices has jumped from 15 billion in 2015 to 23 billion in 2018. Notably, the emergence of 5G cellular services for offering low latency, highly reliable connectivity offers new fuel innovation in turning diverse, productive activities into a connected, intelligent production system, often termed the fourth industrial revolution (4IR). These devices are producing an enormous amount of diverse data, starting from car positions to energy consumption. They are also being installed in farmlands for creating data related to vital parameters starting from soil ingredients to the moisture level. Lately, IoTs began to unfold in Bangladesh as well, particularly in utility metering.

iv. EXTRACTING INFORMATION AND DERIVING KNOWLEDGE: Data produced by connected devices are to be processed to extract information, such as what is the pattern of water or energy consumption. Similarly, data provided by moisture monitoring IoT devices are to be processed to extract information regarding the rate at which the moisture level of cropland is changing. Information derived from the processing of data gathered from connected devices should be translated into knowledge, often by fusing with applicable science and complementary information contributing to our understanding of various situations. Such knowledge is a vital precursor to predict likely situations. For example, data provided by in-vehicle IoT devices could be processed to generate knowledge about the real-time diving practice of the drivers. The exploitation of this knowledge for deriving economic outputs is one of the key opportunities in building a knowledge economy.

v. PREDICTIVE ANALYSIS: Knowledge about the past and current situation, derived from data provided by connected devices, could be interpreted within an applicable model to predict likely unfolding situations, such as possible consequences of detected reckless

driving practices. Predicting such conditions is vital in deciding in real-time to maximize the leveraging of the unfolding situation, as well as in minimizing the likely risk.

vi. AUTONOMOUS DECISION MAKING: Once we succeed in installing a related base of IoTs, ensuring reliable connectivity, defining policies and procedures in guiding work processes, and developing good algorithms for extracting and fusing information, knowledge, and predictive analysis from data offered by connected devices, we attain autonomous decision capability.

vii. ARTIFICIALLY INTELLIGENT ACTION TAKING: Autonomous decision-making should lead to intelligent action taking for maximizing the benefit from the possibilities of the digital economy. For example, once unmanned aerial pesticide spraying vehicles are empowered with controlling the nozzle precisely in response to the knowledge about the health of crops on the ground and decision about the variable requirement of pesticides in different parts of the field, the benefit from precision agriculture in minimizing inputs and maximizing outputs and food safety are realized from digital possibilities. Once we reach this stage of Digitization by adding intelligence to physical systems, coined as cyber-physical systems, the benefits of the fourth industrial revolution (4IR) start unfolding.

Here is an example of a step-wise progression of using digital technologies, through seven maturity levels, in the transportation sector. The computerization in the 1990s started for reservation and ticketing of bus services. The rapid expansion of mobile Internet offers the opportunity of installing IoT devices in buses and trucks for providing us real-time data about locations, speed, acceleration, and so on. Data delivered by those devices could be processed to extract information such as average speed so that that speed limit compliance could be ensured. Further data analysis could lead to knowledge about the driving practices of different vehicles in different situations and locations. Additional research may lead to predicting likely undesirable outcomes such as the occurrence of accidents. The fusion of such knowledge with drivers' track records and applicable policies and regulations will lead to autonomous decision-making. The next step is to have onboard vehicle capability of implementing such a decision leading to intelligent control of driving practices in reducing the accident rate and maximizing the vehicle efficiency.

The digital economy offers us a significant opportunity in driving wealth creation. But to benefit from such possibilities, we need to keep making step-wise progression, starting from establishing discipline in our work processes through computerization towards the installation of IoTs and taking artificially intelligent actions. In the absence of such step-wise progression, economic returns from digital possibilities will likely be sub-optimal. For example, in the lack of reliable as well as affordable connectivity, IoT devices cannot offer us reliable data. Similarly, in the absence of discipline in the form of clearly defined policies and standards, such data will not lead to autonomous decision-making leading to intelligent action. Including Bangladesh, most of the developing countries' journey of the digital economy is focusing on connectivity now. Unfortunately, adequate discipline in work processes is yet to be established, which was supposed to be done in the 1990s. It's time to have sufficient maturity at each previous level to prepare for subsequent investments at higher levels.

3. Leveraging Digital Economy in Driving Economic Growth

During the implementation of the 7th FYP, there has been significant growth of Internet connectivity and smartphone penetration in Bangladesh. As a result, more devices are accessing the Internet, an ever-increasing number of people are using digital services, and more value chains are being digitally connected. The role of digital data and technologies is set to expand further, which could be targeted during the implementation of the 8th FYP. Access to data and the ability to transform data into digital intelligence has become crucial for the competitiveness of firms and also for the Government. Producers and exporters are becoming increasingly dependent on data analytics as operations get more digitized. They use support services that require access to data such as shipping and transportation, retail distribution, and finance. It's worth noting that mobile financial service in Bangladesh has been expanding its footprint from simple money transfer to a preferred mode of retail and utility payments. Such progression has uplifted the role of ICT from offering connectivity, supporting information exchange, and business process automation to the digital economy. The concept of the digital economy has become commonplace to describe how digital technology is changing patterns of production, distribution, and consumption of goods and services, affecting economic outputs, consequentially growth. To respond to this transformation, UNCTAD has changed the title of its flagship report on ICT from the Information Economy Report to the Digital Economy Report (UNCTAD, 2019). Some of the issues pertinent to understanding and targeting leverage in the 8th FYP are explained below.

Value and trend in the digital economy: The evolving digital economy is closely associated with several frontier technologies fueled by data. These frontier technologies are sensors, data analytics, AI, 3D printing, Robotics, and 5G connectivity. They also underpin the fourth industrial revolution. Despite the growth of global IP traffic from 100 GB per day in 1992 to 46,600 GB per day in 2017, which is likely to shot up to 1500,700 GB per day in 2022, the world is only in the early days the data-driven economy. And Bangladesh is showing a similar trend. For example, as reported in reference to BTRC, international internet bandwidth consumption increased by 228 gigabits per second (Gbps) to 900 Gbps at the end of November 2018 from 672 Gbps in June.

Bandwidth consumption by the country's internet users was 411 Gbps in June 2017. In June 2016, the country's total international bandwidth consumption was 265 Gbps, while it was 186 Gbps in December 2016 and only 8 Gbps in 2009. Basically, over the last ten years, data traffic in Bangladesh has grown by over 100 times. During this period, Internet penetration has also increased from less than 1 million to close to 100 million. Unfortunately, there is no natural correlation between such growth in data consumption and socio-economic benefit. Despite the claims that mobile phone penetration or internet adoption drives economic growth, any such causal relationship is contested (Hernandez, K. and Roberts, T. 2018). Such reality demands that the planning exercise of the 8th FYP should take deliberate measures to extract economic value from the growing production and sharing of data.

The core components in driving this explosion of data are i. Devices and network connectivity supporting access and communication, ii. Digital and information technology (IT) sectors, which produce vital products or services that rely on core digital technologies, and iii. A wider set of digitalizing sectors, which includes those where digital products and services are being increasingly used like e-Commerce and Internet of Things (IoT), and iv.

A set of technologies like sensors, artificial intelligence, blockchain, 5G broadband, data analytics, and cloud computing. Unfortunately, economic value in the digital economy is disproportionately exploited by a few countries like the USA and China. For example, these two economies account for 75 percent of all patents related to blockchain technologies, 50 percent of global spending on IoT, at least 75 percent of the cloud computing market, and for 90 percent of the market capitalization value of the world's 70 most significant digital platform companies.

Creating and measuring value in the digital economy: Digital data are an increasingly valuable economic resource, but only once they are transformed into digital intelligence that can be monetized. The data value chain begins with the generation, collection, storing, analysis, and transformation of data into digital intelligence. The challenge is to monetize that digital intelligence in diverse forms. Some of the popular ones are: selling targeted online advertising, operating e-commerce platforms, transforming traditional goods into rentable services, and renting out cloud services. Similarly, intelligence about crop health or soil fertility gathered from digital data obtained through sensors mounted on unmanned aerial vehicles could be monetized through the precision distribution of farming inputs. The genesis of the digital economy lies in the extraordinary amounts of detailed machine-readable information available about practically everything. Although the current focus has been on digital footprints of various personal, social, and business activities taking place on digital platforms that increasingly form the digital substrata of economic and social activity in virtually every sector, it's limited to it. The challenge is to target and exploit suitable digital economic opportunities. Global digital economy estimates range from 4.5 percent of GDP to 15.5 percent, depending on the perspective, whether narrow or broad. USA's digital economy in 2017 has been estimated to account for 6.9 percent of GDP from a limited perspective, expands to 21.6 from an overall perspective. Among developing countries, China has been at the top. China's digital economy in 2017 has been estimated to account for 6 percent of GDP with respect to a narrow definition, which stood at 30 percent of GDP from the perspective of a broad definition. Based on the research of GSMA Intelligence, mobile technologies and services alone generated 6.2 percent of Bangladesh's GDP in 2015. The first challenge to measuring the digital economy, and therefore its value, is the lack of a universally accepted definition, making international comparisons difficult. The core and narrow dimensions relate to ICT infrastructure and the ICT-producing sector, as well as to digital and platform-based services. The broader scope refers to using various digital technologies for performing different economic activities, termed the digitalized economy.

Global review of value creation and capturing in the digital economy: The growing power of digital platforms has global implications that are likely to accentuate inequalities. Breaking this vicious circle to generate a fairer distribution of gains from data and digital intelligence challenges development thinking. For example, Internet advertising revenue share in global advertising revenue grew from 15% in 2010 to 38% in 2017, which is expected to grow to 60% by 2023. And Google and Facebook, two US giants, took away 65% of this revenue in 2017. These two companies alone took away more than BDT1000 crore revenue from Bangladesh in 2018. As a result, the erosion of advertising as a viable revenue source for other businesses like newspaper outlets is a concern. Among other issues, monopolistic trends, how platform companies strengthen their market positions, expansion into different sectors, Information asymmetry and data, and the need for engaging in global policymaking are creating pressure on leveraging the digital economy. Notably, it has been a growing challenge for Bangladesh.

Assessing the scope of value creation and capturing in Bangladesh: As global data platforms have been already monopolized, developing countries like Bangladesh should focus on a new product category or find market niches that globally operating platforms are unable or unwilling to address. To leverage it, the focus should be on addressing, i., small and fragmented local markets, ii. inadequate entrepreneurial knowledge and skills, iii. lack of a highly skilled and affordable workforce, iv. limited access to finance, v. poor intellectual asset base and R&D capacity.

It is being reported by Mckinsey Global Institute (Kaka, N. and others, 2019) that in India, newly digitizing sectors, including agriculture, education, energy, financial services, healthcare, logistics, and retail, as well as government services and labor markets, could each create $10 billion to $150 billion of incremental economic value in 2025 as digital applications in these sectors help raise output, save costs and time, reduce fraud, and improve the matching of demand and supply. For having comparable socio-economic situation, connectivity, and Internet penetration, Bangladesh should also target leveraging proportionate economic benefit from Digitization of these and other sectors.

In order to accelerate GDP growth, Bangladesh needs to focus on total factor productivity. In this regard, Digitization appears to be an untapped opportunity. It is being reported that firms with ICT use had, on average, 197% of the total factor productivity (TFP) level of other businesses in Viet Nam, 153% in Indonesia, 139% in Myanmar, and 139% in China (OECD, 2018).

Despite its promise, the global digital economy poses many challenges, including tax base erosion and profit shifting. Solutions are yet to emerge at a worldwide level. In the meantime, most of the countries are adopting unilateral measures to respond to the challenges (Terara, A., Gonzales K. and Wang, J. 2019).

3.1 An Overview of Progress in Digital Bangladesh Program

Digitization and service transformation are moving ahead. As a result, Bangladesh has moved up nine steps occupying 115th place among 193 countries in 2018 on the E-Governance Development index, published by the United Nations. The spread of the 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 and the ongoing Seventh Five Year Plan in utilizing technology to bring in tangible transformation in all four areas. Progress made in bringing government services to the doorsteps of citizens is probably the area where Bangladesh registered the most significant progress.

3.1.1 Promoting Economic Growth

e-Commerce and online/mobile transactions: The rapid growth of mobile Internet and smartphone penetration has expanded trade over e-Commerce platforms. It's being reported that Bangladesh's e-commerce market stands at $1.6 billion currently and will double to $3 billion by 2023 (Islam, Z. ,2019). It appears that Bangladesh's e-Commerce is dominated by online fashion, toys, and hobby products. The e-Commerce in Bangladesh yet to grow to connect rural producers directly to city dwellers on a massive scale. As part of promoting the Agricultural Commercialization and Enterprises (PACE) project, PKSF has taken an initiative to establish an e-market platform under the PACE project to provide internet-based marketing facilities to the microenterprises. In the conclusion of a new UNCTAD report on Bangladesh's readiness to conduct electronic trade (UNCTAD, 2019a), it has been mentioned, "Bangladesh stands to capitalize on smart improvements it's made to bolster e-commerce-friendly infrastructure – provided it can deliver a strategy and better logistics."

No one left behind – civil registry and financial inclusion: As gathered from the website of Bangladesh Bank, as of November 2019, 965,471 agents of 16 banks have been serving 785.94 lacs clients through mobile financial services. The number of daily transactions reaching 7,680,771 in Nov. Year 2019 has been playing a vital role in addressing the vision for Digital Bangladesh to establish an equitable, inclusive society and economy. MFS has been contributing to the offering of low-cost mechanisms at citizens' doorsteps for banking, money transfer, including safety net payments and local as well as foreign remittances. More than 4554 Union Digital Centers are playing an essential role in serving the agenda of leaving No one behind. To take this progress further ahead, "the Bangladesh Post Office has introduced "Nagad" to reach the digital financial services to common people, particularly those deprived of the banking services."

Business productivity: To reduce the transaction cost of VAT payment, the National Board of Revenue (NBR) has introduced online VAT (Value Added Tax) registration. The rapid growth of bandwidth consumption in Bangladesh, which soared 94 percent year-on-year to 970 gigabits per second (Gbps) in 2018, indicates that businesses are leveraging productivity growth out of technology. There should be further investigation to assess business productivity growth, particularly TFP contribution, gained from ICT.

The rapid expansion of the IT/ITES industry & conversion of ICT into a significant source of export earnings: It is being reported that the IT/ITES industry of Bangladesh has been expanding during the implementation of the 7th FYP, and such expansion has been contributing to export growth. According to the World Development Indicators, ICT service export has been showing steady growth reaching $1128 million in 2016. There was also a report in the mainstream print media in 2018 that "few hundred companies of the country are also earning about $800 million per year from exporting locally developed software, and providing ICT-related services like outsourced and freelance work." To encourage export, the Government has been offering ICT exporter's 10% cash incentive since July 2017.

Facilitating financial transactions and e-Procurement: To develop a citizen-centered inclusive digital financial ecosystem by catalyzing low-cost, interoperable digital payment systems that solve last-mile delivery challenges and fostering innovation of pro-poor financial products, a2i in partnership with Bangladesh Bank has set up The Digital Financial Services (DFS) Lab+. A study by the BRAC Institute of Governance and Development estimated that e-Procurement benefits achieved by one of the pilot agencies (the Local Government Engineering Department – which has successfully cut the cost of its procurement by 12%) produced a yield of at least Tk. 663 in benefits for each taka spent. Hence, scaling it up nationally will produce a significant return.

Establishing technology parks: It has been learned that Bangladesh high-tech park authority is developing 28 high-tech and software technology parks (HTP/STP) and 12 private software technology parks (STPs). Some of the incentives given to investors in HTP/STP are (i) VAT exemption on utilities uses, (ii) Exemption on stamp duty and registration fee for land registration, (iii) Easy repatriation of profit, (iv) Exemption of double taxes, (v) 10 years corporate tax exemption, (vi) 100% equity for foreign companies, and (vii) Exemption on income tax on expatriate professionals for three years. Among these parks, the Sheikh Hasina Software technology park at Jessore has been completed and made operational. Janata Software Technology Park having 16 IT companies as tenants, has already entered into operation. Bangladesh's first-ever university business incubator is being established in Chattogram University of Engineering and Technology (CUET). To foster entrepreneurship, The Sheikh Kamal IT Training and Incubation Center has already been established in Natore.

Creating an innovation ecosystem and startup incubation: Government has launched Innovation, Design & Entrepreneurship Academy (iDEA) for the purpose of nurturing innovative ideas in the areas of Education, Agriculture, Health, Financial Services, eCommerce, e-Governance, Environment, Transport, and Infrastructure. iDEA focuses on concepts based on potential impact, execution strategy, and public benefit. The iDEA has already extended supports to 26 startups. Startup Bangladesh-iDEA has already received recognition by winning an award: the 2019 ASOCIO ICT Award. Some of the start-ups in Bangladesh have already succeeded in getting finance from international VC funds. Despite the high potential, VC funding in the start-up ecosystem of Bangladesh in 2018-2019 appears to be less than $100 million. Compared to the $14.5 billion raised in start-ups in India in 2019 (Sing, M., 2019), Bangladesh has extended legroom to grow.

3.1.2 Enhance Education Quality through ICT

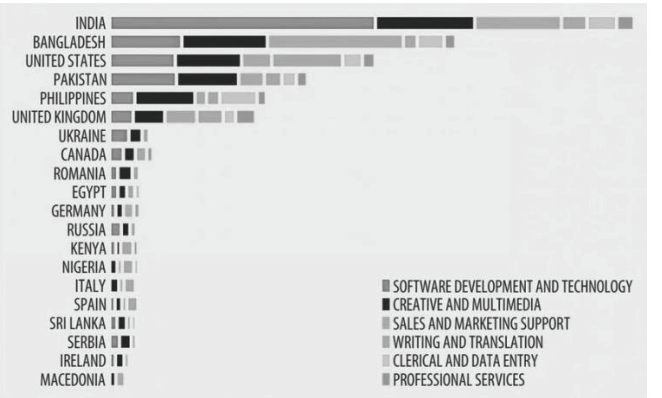
In the Sixth FYP, the strategy for enhancing the quality of education through ICT focused on several key areas: (a) Interactive multimedia classrooms in every school, (b) Incentives for teachers based on performance and innovation, (c) ICT literacy for students in tertiary education, (d) Education TV or web TV, (e) Loans and scholarships for ICT education, (f) Establishing a National Certifying Authority, and (g) Establishing Virtual University.

To implement this strategy, the 7th FYP plan has started to build e-learning infrastructure to develop ICT based education system. For example, the Ministry of Education and Ministry of Primary and Mass education have taken two separate projects to implement 20500 and 7000 multimedia classrooms in the primary and secondary levels. One of the notable signs of progress has been the establishment of 640 ICT learning centers (ILC) in 520 Schools and 128 Madrasas. Bangladesh Computer Council has also set up 3544 labs across educational institutions to expand ICT education to all levels.

3.1.3 Facilitate Youth Empowerment

According to research by World Vision Bangladesh, one in every 10 of Bangladesh's 44 million young people is unemployed. Among them are thousands of graduates finishing their studies at different public and private universities in Bangladesh.

Figure 1: Bangladesh's position in on-line freelancing market place



The Online Labour Index, by country

Image: Oxford Internet Institute

The rapid digitalization of Bangladesh - including easy Internet access in urban areas and Government and non-government initiatives to promote freelancing – has created outsourcing opportunities for these youths. The spontaneous response of youths has made Bangladesh the second-largest supplier of online labor, according to the Oxford Internet Institute (OII), as shown in Fig. 1. About 500,000 Bangladeshi youths are active freelancers who have been working regularly. It's estimated that they are generating $100 million annually, according to the ICT Division of Bangladesh. Freelancing jobs include diverse tasks from computer programming to web design, tax preparation, and search engine optimization. Particularly, freelancing is becoming a preferred career option for many Bangladeshi women, as it provides them with an opportunity to work from home. From the given numbers, per freelancer's yearly earning is $200, which is very insignificant. It appears that Bangladeshi youths have been working at a meager hourly rate. The focus should be given to improving freelancers' earning rates.

3.1.4 Enhancing the Equity Aspects of ICT

To address the equity aspect of ICT, building on the progress achieved in the Sixth Plan, the strategy of the 7th FYP emphasized: (a) Improving the efficiency of land markets, (b) Self-governed and responsive local governance, (c) Promoting agriculture through ICT, (d) Strengthening healthcare for the poor through ICT, and (e) Effective and efficient social security administration through ICT.

(a) Improving the efficiency of land markets: The Government, in a bid to end people's suffering and capture corruption, took the initiative to digitalize the land management sector. It appears that work is already underway to digitalize the ledgers and launch e-mutation and e-settlements, and the process for land zoning and digital land data bank is also ongoing. It's being reported that the progress is far from satisfactory. As reported

in the media, responding to queries on the matter, Finance Minister AHM Mustafa Kamal said, "The 2019-20 fiscal year budget has an allocation for digital ledgers, e-mutation and e-settlements, land zoning and digital land data bank." Advanced technologies like UAV mounted sensor systems should be used to expedite the land digitization project. To take it forward, e-Namzari service has already been introduced in 362 Upazilas in 61 Districts. Based on a pilot project, a cost-benefit study indicates that Digitization of all land records of the remaining 483 Upazila has the potential to generate Tk. 619 in direct and indirect benefits result from each taka spent to digitize land records

(b) Self-governed and responsive local governance: To address this vital issue, digital service centers have been established in 64 districts, 4554 unions, 407 wards of city corporations, and 325 wards of municipalities. Through these centers, 150 services are being delivered, including birth-death registration and paying electric bills. Extending the option of accessing those services through mobile phones could make further progress. E-Service centers have been established in offices of district commissioners. These service centers have been contributing to increased access and lower cost of accessing those services. Due to the low computer and smartphone literacy rate, the expansion of such e-service delivery networks also runs the risk of increasing barriers to access. Measures, including voice interface and training, should be taken to address such issues.

(c) Promoting agriculture through ICT: Through district level e-Service center, agricultural advisory services are being delivered. In addition to it, a website ((http://krishi.gov.bd/) has been established, and a 3331 call center has been opened for providing advisory services to farmers. Apart from it, 254 Upazilla e-Agriculture Service Centres are also offering services. Integrating advanced technologies like UAV and also blending such additional means with extension service delivery may extend such progress further.

(d) Strengthening healthcare for the poor through ICT: To address inadequate healthcare services to the marginalized citizens, due to the lack of availability of doctors in rural areas and high cost of accessing services in health facilities, telemedicine centers are being established. So far, telemedicine centers have been established in 25 health centers. There has been enormous potential to leverage ICT, including wearable devices, to address multifaceted healthcare service delivery issues facing Bangladesh.

(e) Effective and efficient social security administration through ICT: The action plan for the implementation of the National Social Security Strategy (NSSS) has been developed (Cabinet Division and GED, 2018). It appears that MIS system development for its implementation yet to start.

3.1.5 ICT for Greater Transparency, Good Governance, and Pro-citizen Civil Service Delivery

As explained before, through digital service centers at Unions, wards of city corporations and municipalities, and offices of district commissioners, access points for public service delivery have been extended. Progress in developing enterprise resource planning (ERP) software for streamlining and integrating operations of the Government's offices is underway. To support this program, Bangladesh National Architecture (BNEAF) has been developed. The integration of blockchain technology is also being looked upon. For addressing, Cyber Threat Detection and Response, CIRT has been established. Progresses have been made in multiple areas like, (i) automatic toll collection system, (ii) remote

monitoring of automatic toll collection system, (iii) Client Server-based Integrated System based Accounting System, Provident Fund Management System, Payroll System, Store Management System, Vehicle Management System and Asset Management System, (iv) Audit Monitoring and Management System, (v) Citizen Information Management System (CIMS) for Bangladesh Police, (vi) Integrated Data Information and Management (iDIM) for Bangladesh Boarder Guard, (vii) Candidate Information Management System (CIMS), Result Management System (RMS), and Election Management System (EMS) for Bangladesh Election Commission, (vii) piloting of electronic voting machine, (viii) introduction of intelligent ID card under Identification System for Enhancing Access to Services, (ix) Problem Solution Management System (PSMS) for NID problem resolution, (x) Piloting of Business Register, (xi) Web enabled GIS based Information System based land management, (xii) Integrated e-GP, (xiii) Computerization of Existing Mouza Maps and Khatian, (xiv) Foreign Aid Management System (FAMS), and (xv) Integrated VAT Administration System iVAS.

These ongoing development activities should be nurtured further, additional complementary modules should bed developed, integration between them should be established to ease access and reduce transaction costs. Emphasis should be given on optimization, local value addition, and taking advantage of unfolding technologies.

3.1.6 Strengthening Judiciary

Through the support of the e-Court system (http://www.ecourt.gov.bd/), executive magistrates are finding it easier to run mobile courts. Web site http://www.judiciary.org.bd/ has been supporting the development of judiciary service delivery.

3.1.7 Responsive Law Enforcement

Online Police Clearance Certificate has been introduced. To facilitate the exchange of information between police and citizens, BD Police Line has introduced Mobile Apps. To facilitate secured communication among police units, under infosharker-3, Network Connectivity is being established between 1000 police units. E-Traffic Prosecution & Fine Payment System has already been introduced. To ease the immigration service issue at the international port of entries, Immigration Management Software has been introduced.

3.1.8 Strengthening Responsiveness of Parliament

It has been learned that steps are being taken to engage citizens in sessions of parliament.

3.1.9 Reduced Environmental Vulnerability

There has been a positive correlation between the progression of digital Bangladesh and the reduction of environmental vulnerability.

As of June 2019, through digital service centers, 422.3 million services have been delivered. It's being claimed that due to delivery of such services, there has been a reduction in Time (T), Visits (V), and Cost by 77%, 75%, and 36%, respectively. There appears to be a strong positive correlation between the reduction of number of visits and the environmental effect. In addition to it, other progresses in ICT usages are also contributing to reducing harmful impact on the environment. It appears that there are many untapped opportunities for addressing environmental issues, which could have been leveraged out of ICT.

3.2 Reviewing Progress in Development of ICT Infrastructure and Service Capacities

3.2.1 Strengthening the Enabling Environment

Reliable and secure infrastructure: Due to the reduction of a power cut, the reliability of ICT infrastructure has gone up. Despite the Bangladesh Bank's heist, Bangladesh has been rated favorably among South Asian Countries in a recent rating. In spite of favorable ratings, Bangladesh's 73rd ranking out of 100 nations in the global cybersecurity index, measured by the UK-based National Cyber Security Index (NCSI), runs a high-risk level. Further progress needs to be made on the cybersecurity front. The advent of 6 international terrestrial cable operators, the launching of Bangabhandhu-1 Satellite, and submarine cable connectivity through the 2nd cable have addressed much-needed redundancy in global connectivity.

Incentives for private investments: The Government has expanded incentives, including cash incentives, for attracting investment, both home and abroad. Responses of private investment in leveraging such incentives are yet to pick. In the recent past, through very high tax differential, Bangladesh has made some successes in local assembling of Mobile handsets. The local value addition and job creation do not appear to be encouraging. For example, one foreign firm has targeted to create 200 jobs in assembling 1 million smartphones in a year. Similarly, export volume yet to pick up in leveraging a 10% cash incentive. The next challenge is to increase local value addition capacity.

Public financing: It appears that public finance has rapidly picked up in the ICT sector. It seems that almost 70% of the investment made in the ICT sector is shared by the Government. It has steadily increased from BDT 6,107 crores in 2015-2016 to BDT 15,773 crores in 2019-2020 (MoF, 2019). Almost 258% increase of public finance over 05 years in the ICT sector is substantial growth. Gradually, public finance should keep increasing. But the challenge is to use public finance to stimulate private investment.

Partnerships: The market-led reform of the telecom sector opened the partnership for encouraging private investment. It happens to be in the recent past, there has been a declining trend in the share of private investment. During the last couple of years, significant investments like $1 billion planned for union-level fiber optics connectivity or investment made for developing high-tech parks and national data centers are from the Government. The Eighth Five Year Plan should look for means in intensifying private investment in the ICT sector.

3.2.2 Investing in R&D

In this regard, detailed data are not available. Through different means, funding has been provided for ICT research. For example, HEQEP projects funded university-based research, having relevance to ICT. Ministry of Science and Technology also provided grants. ICT division also offered grants. Moreover, a2i has used the fund for the purpose of R&D. How much that R&D investment has led to innovation generating firm-level new revenue and contributing to the economic growth of Bangladesh is not clear. An investigation should be carried out to get clarity. The patent office data do not indicate that R&D investment in Bangladesh is increasing patent filing. It appears that, on the one hand, R&D investment in ICT as a percentage of GDP is negligible.

On the other hand, commercially attractive outputs such as patents from limited R&D investment are invisible. For example, according to the data of the Department of Patents, Designs, and Trademarks office, the local filling of the patent has gone **down from 70 in 2000 to 69 in 2018.** This is a very alarming picture. Against the backdrop of the rapid growth of patenting in the global ICT industry, basically, there has been no patent filing growth in ICT in Bangladesh. Bangladesh must address this issue during the 8th FYP to leverage TFP and development aspiration issues out of digital Bangladesh.

3.2.3 Branding Bangladesh ICT Services

Over the last five years, several initiatives have been taken to brand Bangladesh as a preferred destination for software and ICT service sourcing. Through the LICT project, a number of projects have been implemented. International consultancies like Boston Consulting Group (BCG) were recruited in implementing those projects. An outcome assessment should be carried out to assess the implications. It appears that such branding activities yet to respond to large-scale investment, particularly in the area of software and IT service outsourcing. It's also to be noted that global ICT business opportunities have been shifting from service outsourcing to intellectual asset generation and commercialization.

3.2.4 Develop and Strengthen ICT Skills Base

Over the last ten years, there has been a significant expansion of ICT education. On the one hand, more than 100 private and public universities are offering undergraduate degree programs in Computer Science and Engineering, and related areas. On the other hand, the BASIS and LICT project of BCC implemented programs in training more than 50,000 graduates. Reputed foreign training firms like EY were engaged for this purpose. Due to changing business prospects and the lack of significant private investment, the leveraging of the expansion of the ICT skill base in the country appears to be sub-optimal.

3.2.5 Strengthening Access to ICTs

There has been significant progress in basic ICT access, taking internet penetration to 100 million in January 2020.

IT infrastructure development: As per the plan of the 6th FYP, connectivity of the 2nd submarine cable has been established. Moreover, Bangladesh has succeeded in attaining the ownership of a maiden satellite: Bangabhandhu-1. There has also been progressing in laying fiber optics cable, reaching some Union level.

Telecommunication services: During the 7th and 6th FYP, 3G and 4G services have been rolled out. According to BTRC statistics, as shown on the website, mobile voice subscription has grown from 128.9 million in July 2016 to 164.82 million in November 2019. Despite such growth in subscriptions, there has been a recent fall in the quality of telecom services (BTRC, 2020). On the one hand, the dominant operator reports record profit. On the other hand, the rest of the operators are suffering from the lack of possibility of reaching to profit by making further investment. Basically, smaller mobile operators are caught in an inescapable loss trap. As a result, there has been a lack of competition in making an investment. The major challenge for the policymaker and regular is to figure out ways for intensifying competition. So far, there has been no tangible progress. To address this vital issue, it's time to go back to the basics of nurturing competition in an industry that

has a natural tendency of monopoly. Though Bangladesh was not covered, a recent survey conducted by Pew Research finds that "phone owners struggle with connectivity and costs" in similar countries. The study on 11 emerging economics (Pew, 2019), including India and Vietnam, finds "a median of 46% in these countries say they frequently or occasionally have difficulties getting reliable phone connections, 37% say it can be a challenge to pay for their phones and 33% report finding places to charge their phones is a problem at least occasionally." Studies should be conducted at regular intervals of time to understand difficulties faced by subscribers, as simple subscription number growth does not provide adequate information.

Access to broadband: Due to the rollout of 3G and 4G services during the 6th and 7th FYP, mobile internet penetration has rapidly gone up. According to BTRC data reported in the media (BTRC, 2020), by the end of 2019, Internet connections crossed 99 million. Among them, 59.8 million connections are over the 3G network, and 27.1 million subscribers are using 3G services. Expansion of internet connection has led to the rapid growth of data consumption, reaching 922 Gbps by the end of 2019 from 894 Gbps in 2018. By the way, wireline Internet services provided by ISPs and PSTN providers contributed only 5.79 million connections. From different media reports and key informant interviews, there appears to be dissatisfaction about the speed and cost of mobile data plans. Bangladesh's situation about the quality and the price of mobile-based internet connections may have similarities to the findings of Pew research on 11 emerging economies—"a median of 42% report frequently or occasionally avoiding some activities on their phones because they use too much data."

Content development and services: It has been learned that mobile-centric Internet connections in Bangladesh dominate the usages for social networking and entertainment. Productive usages of mobile Internet appear to be very limited. It's worth mentioning that mobile financial services are primarily using USSD as opposed to the Internet connection. Moreover, content in Bangla appears to be an issue as well. According to Pew research on 11 emerging economies, "a median of 29% of mobile owners in these 11 emerging economies say they have frequently or occasionally experienced problems finding information online in their preferred language." It appears that the high cost of mobile data has been a barrier to exploit ICT innovation opportunities in critical areas like education, health, e-Commerce, and agriculture.

Inclusive partnerships: It appears that a2i has been working on developing content and services for leveraging internet connections. The Government, through the iDEA project, is also promoting innovation and entrepreneurship for leveraging ICT access. Moreover, mobile operators are also encouraging some accelerator programs in this regard. Despite such initiatives, a large-scale rollout of highly attractive digital services yet to happen.

3.2.6 Building a Resilient Digital Bangladesh

The installation of optical Fiber Cable Network connecting 1000 union parishads and 290 Upazillas has been contributing to the theme of resilient Digital Bangladesh—"resilience based development interventions promote inclusiveness that reduces the relative vulnerability of less fortunate communities." Digital service centers have also been contributing to this agenda as well. The development of the physical facility of the Tier IV data center has also made progress towards reducing the vulnerability of digital service delivery. As founded in Pew research (Pew, 2019), there has been a growing mobile divide

in emerging countries. In emerging economies, some still do not have mobile phones, and even phone owners struggle with connectivity and costs; they also face security issues. The 8th FYP should have a thorough investigation to assess the untapped opportunities and issues for leveraging digital Bangladesh to drive economic and social growth at the grass-root level. UN study finds that Bangladesh sets foundations for bridging the digital divide, provided the following smart policies are made to leverage it (UNCTAD, 2019a). The 8th FYP should take into consideration to leverage this opportunity.

3.2.7 Digital Bangladesh and Gender Policy

It appears that women are in a bit disadvantageous position in leveraging ICT. Key informant interviews indicate that women over 50 in Bangladesh are reluctant to use smartphone features, particularly pertaining to financial transactions. As increasingly such features are being used in developing Apps for delivering vital services such as retail payment, women are falling further behind men. To reduce the gender gap, among other initiatives, the Government of Bangladesh has taken a step in adopting the UN's WIFI (Women ICT Frontier Initiative) program in line with its national ICT strategy called Digital Bangladesh. The government has also implemented some awareness campaigns in partnership with NGOs and the private sector. According to a study done by IFC, women face five barriers in the MFS market: (i) lack of nationwide data on female MFS market, (ii) absence of business case to digital wage payments, (iii) absence of targeted MFS products, (iv) low financial literacy and (v) limited female MFS agents. The 8th FYP should target to reduce the gender gap by leveraging ICT.

3.2.8 Indicators for Measuring Progress of Digital Bangladesh

Bangladesh's overall position in some vital overarching indicators related to Digital Bangladesh is shown in Tables 1 and 2. Proposed targets for improvement during the 8th FYP leading to reaching 2041 targets are also shown in these tables.

Table 1: Evolution of Bangladesh's Competence in Digital Space and Indexes

Focused areas and Indicators	Bangladesh's development stages over three significant periods					
	Till 2017		2020-2025		2031-2041	
Global Innovation Index, 2018						
	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-100)	Rank
ICT accesses*	30.5	111	50	50	85	20
Government's online service	62.3	60	75	45	90	15
e-Participation	52.5	82	70	40	85	20
ICT and Business model creation	48.9	108	65	50	75	20
ICT & Organizational model creation	42.4	104	55	60	65	30
World Economic Forum: Global Competitiveness Report, Ranking among 127 countries in 2018						
	Score (1-7)	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+	3.8	92	25	50	40	20
Internet bandwidth kbps/user+	9.2	111	40	60	55	40
Mobile-cellular telephone subscriptions /100 pop+	77.9	121	100	70	120	40

* wireline broadband access play's an important role, not score on a scale of 1-7

Table 2: 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 significant periods					
	Till 2017		2020-2025		2031-2041	
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	

4. Strategic Areas for Making Progress during the 8th FYP

Understanding critical issues and how they should be investigated further in preparing Bangladesh's 8th FYP are at the core of developing the envisioned background paper.

4.1 Identification of sub-sectors of ICT and other potentially innovative sectors

The ICT sector could be segmented from more than one perspective. In this report, it has been segmented from the standpoint of basic infrastructure, value creation, and capturing. The significant sub-sectors of ICT are (i) Domestic ICT infrastructure, connectivity, and cybersecurity, (ii) Public service transformation and delivery in digital space, (iii) Software and process innovation for the domestic market, (iv) IT-enabled remote service delivery, and BPO, (v) IT hardware device and component manufacturing, (vi) IT hardware design, redesign and innovation, (vii) Software innovation and service for the export market, (viii) Internet of Things, smart devices and connected society, (ix) Robotics, Automation, and Smart manufacturing, and (x) ICT based smart farming, food processing, and primary industries.

4.2 Identification of economy-wide linkages with the ICT sub-sectors

Starting from reducing road accidents to transferring money, basically every economic, even social, aspect has linkage with ICT. Such connections have been summarized in Table 3. Examples of ICT linkage with Agriculture, Fisheries, and Livestock are shown in Table 4. Continued advancement of ICT, digitization, and software is forming the technology core driving the fourth industrial revolution. Research finds that this technology core can contribute to our mission of attaining, basically, every target of 17 goals of sustainable development. A mapping of this linkage is shown in Appendix J.

Table 3: Economy-wide linkages of ICT sub-sectors

ICT and innovation sub-sectors	Economy-wide linkages
Domestic ICT infrastructure and cybersecurity: Telecom, Internet, Cloud platforms, submarine cable, satellite, cross-border terrestrial cable, and backbone transmission	This backbone infrastructure supports each sector of the economy and public service delivery to benefit from digital opportunities. For example, voice calls and internet connectivity work over this segment of the ICT industry.
Service transformation and delivery in digital space	Major areas such as education, financial, health, and public service delivery are already benefiting from it, and there has been further scope for expansion.
Software and process (public and business) innovation for the domestic market	It has been playing a pivotal role in reducing transaction costs and simplifying public service delivery. Enterprises are benefiting from software through process optimization and reducing response time.
IT-enabled remote service delivery and Business process outsourcing (BPO)	It improves the efficiency of domestic economic sectors and public service delivery; it also opens the door of service export.
IT hardware device and component manufacturing	It opens a door of labor-based value addition for meeting both domestic and export markets. More than 60% of mobile handsets sold in Bangladesh carry made in Bangladesh labels.
IT hardware design, redesign, and innovation	This is a vital area for creating the opportunity of adding value through ideas. It forms the foundation of the knowledge economy.
Software innovation and service for the export market	It offers the opportunity of innovating software solutions in creating the demand for knowledge and ideas. Progress has already been made.
Internet of Things, smart devices, and connected society	Starting from the supply of utilities like water, electricity, and natural gas to real-time reckless driving monitoring, major economic sectors can benefit from innovation in this area.
Robotics, Automation, and Smart manufacturing	There is an opportunity of innovating and producing robotics and automation solutions, targeting both local and global markets. On the other hand, the local manufacturing sector can improve competitiveness by adopting those solutions. Moreover, the local manufacturing sector also needs services to adopt, adapt, and maintain such intelligent equipment. This sub-sector also has implications on low-skilled value addition strategy and overall labor market transformation.
Smart farming and primary industries	ICT innovations for smart farming have a significant bearing on agricultural and other primary industries. Sensors, Drones, Data analytics, and intelligent software could reduce wastage and increase yield.

Table 4: Examples of ICT linkage with Agriculture, Fisheries, and Livestock

Sectors	Major Development Issues	Unfolding Opportunities of Leveraging ICT
Agriculture	Minimize yield gap	It's being reported that social networks could be used to facilitate agricultural support and information flows between farmers. Such availability of information could support farmers to make better farming decisions, contributing to increasing yields, reduced environmental impacts, and improved livelihoods (FAO, 2019).
	Reduce wastage of farming inputs	
	Documenting farmer's indigenous innovations, farmer's creativity, and establishing a database for indigenous technologies	
Fisheries and Livestock	Raise aquaculture production, and increase the sustainability of fishing in the ocean.	Sensors provide real-time data, and upon process them, the software decides and controls optimum feeding to fish, resulting in the reduction of feed wastage, improvement of water quality, and yield increase. Sensors, Data analytics, and AI are being harnessed to reduce the mortality rate of chicken and increase meat production. Challenge of fishing in the sea--where to fish and how to avoid bycatch, increasing efficiency. Analysis of comprehensive, near-real-time vision of ocean resources and fishing activities could pinpoint the accuracy of fishing activities. For example, onboard cameras, assisted by image-recognition software, can provide fishermen with important information on the content of their catch in real-time, including species, volume, and fish size.
	Promote sustainable improvements in animal productivity of milk, meat, and egg, including products processing and value addition	
	Promotion of mariculture and diversification of coastal aquaculture	

4.3 Current and Future Problems of ICT Development and Feasible Options

Connectivity and Internet Data Price: The advent of international terrestrial cable (ITC) operators, laying of the 2nd submarine cable, and operation of Bangabandhu Satellite-1 have primarily addressed the global connectivity issue. As a result, the price of wholesale bandwidth has come down to below BDT500 per Mbps. But there has not been a proportionate fall in Internet data price at the consumer end. Supply-driven demand creation measures should be taken to benefit from the scale and scope advantages for reducing cost addition at the transmission and access network. To attain it, competition should be intensified in these two segments. It seems aggressive public investment in laying fiber optics networks has somehow slowed down the competition in domestic transmission. On the other hand, a virtual monopoly in the access network has weakened competition and strategic investment. Long-term strategy and policy perspectives should be formulated to govern healthy competition to benefit from scale, scope, and innovation to reduce costs and improve quality.

Cloud Infrastructure and Data Privacy: In the cloud segment, private investment is insignificant, and global cloud operators virtually monopolize the local market. Measures should be taken to create a local cloud service market and address data privacy and security issues. To address the monopolization of the local digital advertisement market by global players like Google and Facebook, appropriate policies and regulatory measures should be adopted.

Private investment for creating a digital economy: Along with the expansion of public service delivery over the digital space, competition should be intensified for encouraging

private investment. The success of mobile financial services should be expanded to cover the whole space of banking and financial services. Moreover, corporate customer service should be encouraged to outsource over the net. So far, the leveraging of digital technologies is limited to technology import-driven connectivity, computerization, and basic service delivery. Measures should be taken in high-value creation through product and process innovation, turning it into digital economy agenda.

Innovation and Knowledge economy out of Digital Bangladesh program: Along with the intelligent adoption of digital technologies and labor-based high-tech manufacturing, Bangladesh should focus on idea-based value addition, both for domestic consumption and export. This change in focus will build the foundation in building a knowledge economy. The challenge of the knowledge economy is to add value to both products and processes out of knowledge and ideas. Digital technologies are highly amenable to value creation out of the expertise. Therefore, the Digital Bangladesh program should be blended with the knowledge economy development agenda. Once we start making progress in it, we will likely begin to observe the rapid growth of patent filing and the conversion of patents into products and features.

Line Ministry specific digital strategy and partnership: For leveraging digital economy opportunity, every line ministry should plan to take advantage of digital technologies by creating a local innovation economy. Linkages between Government, Research Laboratory, Industry, startups, and Universities should be developed to implement such line ministry-specific strategy. It's high time for Bangladesh to focus on adding value to the digital Bangladesh program through ideas to accelerate our progress in developing the knowledge economy. During the 8th FYP, public budget allocation in Digital Bangladesh and ICT should prioritize local value addition through ideas, innovating both products and processes. Such change in focus will strengthen the base of the local ICT industry as value addition in ICT through labor is extremely low and is getting lower. It will also address the Human resource and productive knowledge issue simultaneously.

Attaining SDGs by leveraging digital technologies: There has been an estimate that Bangladesh needs more than USD 900 billion to meet SDGs by 2030. Intelligent usages of digital technologies and innovation of solutions have tremendous potential to increase both the effectiveness and efficiency of allocated resources. It's suggested that a well-thought-out strategy should be developed to leverage the Digital Bangladesh program for attaining SDGs while creating Bangladesh's innovation economy.

Fourth Industrial Revolution and digital agenda: Digital technologies in an advanced stage form a significant building block of the technology core driving the fourth industrial revolution. There is no denying that Bangladesh's low-cost labor-based advantage is being eroded by the adoption of advanced technologies and robotics in the production process. But it's also opening the opportunities of leveraging underlying technologies for redesigning products and methods to make them so that energy and material needs keep falling. Bangladesh should develop an integrated strategy for attaining SDGs, dealing with 4IR, creating a knowledge economy, addressing HR development, quality of education and skill issues, improving both the public and private services, and strengthening the ICT industry by taking advantage of the ongoing progression of digital technologies.

4.4 Suggested Institutional and Related Changes (e.g., governance) Needed for Overcoming emerging ICT Problems and Achieve Goals

Strengthening technology and Innovation strategy as well as policy capacity: In partnership with Think Tanks, Individual Researchers, and Universities, the Planning commission should develop a program for continuous monitoring of global and local technology and innovation dynamics and assessing unfolding threat as well as opportunities. Such intelligence should be used to create and fine-tune strategy and policy for leveraging technology potential in attaining SDGs, dealing with the fourth industrial revolution, and meeting vision 2041.

Develop a program for linking industry, academic, and research: To uplift Bangladesh's capacity to add value in economic outputs through ideas in addition to labor and raw material, a program should be taken in partnership with concerned line ministries, industry associations, and lead firms to generate patentable ideas of redesigning existing products and processes to produce them so that quality keeps going up and the cost keeps falling.

Develop capacity for Governing competition in Telecom and Digital Service Industries: It appears that neither BTRC, nor MoPT, nor ICT division has the capability of governing competition in industries that have a natural tendency of monopoly. Like telecom, once we take conventional services in digital space, the natural tendency of monopoly starts growing. Focus on governing competition in such industries to encourage private investment.

Data privacy, security, and antitrust watchdog for ensuring equitable share in global digital space: Increasingly, international players, starting from search engine providers to cloud operators, are posing a threat to data privacy and marginalizing local players in the digital market. Strong capacity should be developed to watch the evolving situation, protect Bangladesh's interest, and create new opportunities through appropriate measures.

4.5 Issues in the Development of ICT for Growth and Poverty Reduction-Telecommunication and Related Facilities, High-tech Park, etc.

(i) ICT for growth and poverty reduction: It is perceived that there is a strong correlation between broadband penetration and economic development. Despite having potentials like farming yield growth out of knowledge sharing over smartphones and telemedicine, the high cost of mobile data and lack of innovations kept most of those potentials untapped. But, the development of mobile financial services over USSD code (narrow bandwidth data service) appears to be remarkable. As IFC research finds, "Its work has strengthened financial inclusion in the country, enabling poor and unbanked customers to access essential financial services safely and securely." One hundred million internet connections are waiting to witness a much bigger success story.

(ii) Telecommunications and Internet penetration: Over the last decade, there has been significant progress in Internet penetration and growth in data consumption. According to BTRC, the total number of Internet subscribers has reached 99.059 million at the end of November 2019. Among them, 93 million subscribers access the Internet through mobile connections, and only 5.7 million subscribers have wireline access. It's being reported that social networking and entertainment have been dominating mobile Internet subscription and data consumption. Such reality does not correlate Internet bandwidth consumption

growth by 261 Gbps in 2018, reaching 672 Gbps, showing 63 % year-on-year growth, to economic and social development. Productive application-centric innovation should be given due focus to leverage Internet penetration and bandwidth consumption for development progression.

(iii) High-tech park: It's understood that Bangladesh has been developing 28 high-tech parks. Despite ambitious targets and public investment, private sector investment yet to take off in these parks. These high-tech parks should be integrated with Academic and R&D facilities making them the nucleus of the high-tech economy. The development of Bangabandhu Sheikh Mujibur Rahman Digital University should be accelerated, and other universities should be linked to it, building an innovation cluster around high-tech parks.

(iv) Weak redesign and innovation capacity: As labor content in software and high-tech device manufacturing has been falling, the focus should be on adding value through ideas. Due to inadequate industry-focused R&D capacity, Bangladesh has a weak position in idea-based value addition in ICT. As a result, despite the engagement of over 0.5 million freelancers, Bangladesh's revenue is very insignificant from outsourcing. On the other hand, labor-centric value addition in mobile handset assembling appears to be less than 10 percent.

(v) Weak linkages between actors of the digital economy: Due to weak linkages between universities, poly-technique institutions, training centers, public procurement of ICT solutions, ICT solution using firms, and ICT industry, there has been plodding progress in knowledge and innovation capacity. As a result, in this globally connected, competitive market economy, Bangladesh's relative value addition capacity in the ICT sector has been weakening.

(vi) Conflicting relations between ICT and poverty: ICT has the potential to increase access to public services at the bottom of the pyramid (BoP). There has been progress along this line through Union Digital Centers (UDCs). As of 2018, 4554 UDCs have been reducing corruption and introducing greater service delivery efficiency. But the next generation ICT innovation is having a negative impact on employment. For example, automation in the RMG sector has been causing job loss. Notably, women are worse sufferers. The focus should be on innovations in improving the profitability of economic activities being undertaken at the bottom of the pyramid, such as farming and small-scale manufacturing.

4.6 Identification of Opportunities for Engaging ICT for Rendering Health Services, Education, and Other Services

Health: e-Health is being given a special emphasis due to the Digital Bangladesh campaign of the present Government, which provides high priority preference to the delivery of health services to citizens through ICT. According to WHO, in 2015, Bangladesh reported its activities in e-health policy formulation (WHO, 2016). The Ministry of Health & Family Welfare has taken steps, including in developing e-Health strategies and policies (MoHSD, 2018).

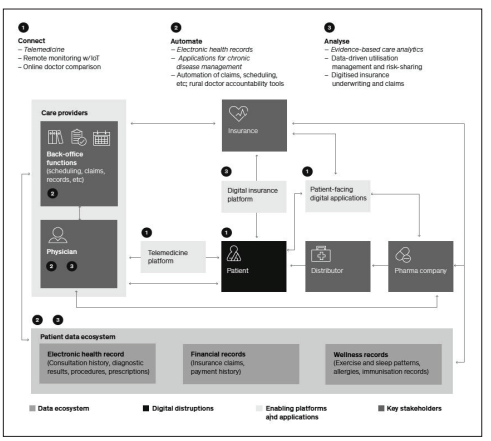
Bangladesh has too few doctors and nurses and not enough hospital beds. At the same time, life expectancy had risen to 72.8 years in 2018 from 47 in 1972. Digital solutions can help, not just in alleviating the demand-supply mismatch by freeing up the time of scarce

healthcare professionals but also in improving quality and trust. Telemedicine lets doctors consult with patients over a digital voice or video link rather than in person; this could enable them to see more patients, thereby easing the doctor shortage in rural areas. IoT, wearable technology, analytics, data, cloud, and mobile all underpin the emerging digital-first healthcare environment (Cognizant, (2019). The schema shown in Fig. 2 imagines how Bangladesh's healthcare landscape could evolve by 2025 if digital applications were widely adopted. This would require an open and interoperable electronic health record ecosystem, clear guidelines about data ownership and privacy, the wide availability of broadband connectivity in rural areas, and rules about who can see records. In implementing this envisioned framework, Bangladesh should set specific targets related to freeing time of healthcare professionals and reducing patients' visits to healthcare facilities. In order to progress with envisioned e-health possibilities, it's also essential to demonstrate the benefits since this makes it possible to address the difficulty with change that health service providers have. In this respect, a set of short-term, medium-term, and long-term indicators to be chosen (PAHO and WHO, 2016). A few examples are given below:

Table 5: Example indicators for e-health

SL	Example Indicators Related to e-health	Baseline 2020	Target to be achieved by 2025
1	Determines the average patient waiting time. Evaluates the time the patient saves through teleconsultations concerning routine care.	To be established (TBS)	50% saving of waiting time
2	Determines the perception of the user after using telemedicine services.	TBS	50% improvement
3	Number of remote vital health signal monitoring cases per year and what % of them are being monitored over the Internet	TBS	25% of total monitoring of health signals
4	Reduction of in-patients consultation	TBS	50% reduction

Figure 2: Envisioned healthcare what Bangladesh should target to achieve by 2025: digital technologies enable seamless care centered on patients; adapted from Kaka, N. and others (2019)

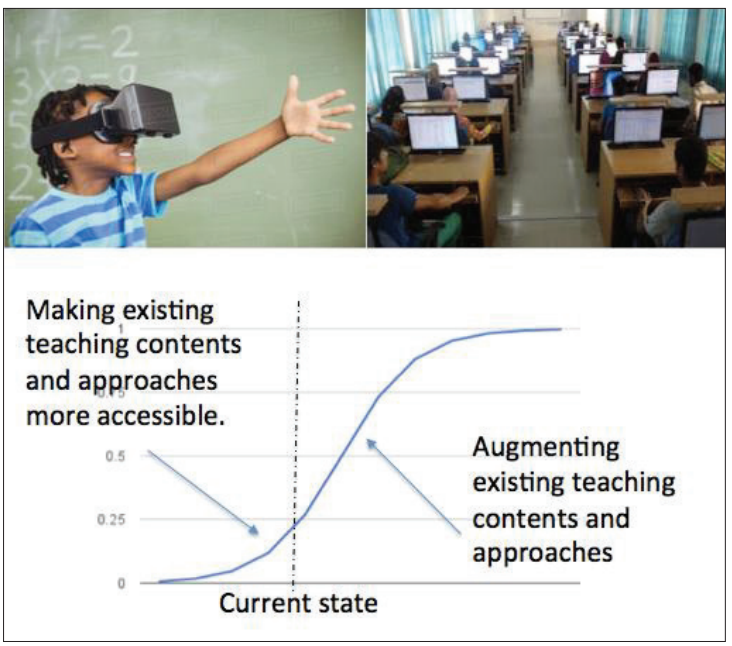


t has been observed that in trials and pilots within the contexts of developing countries, telemedicine cuts consultation costs by about 30 percent. There is a possibility that by

adopting telemedicine, Bangladesh has the possibility to succeed in replacing 30 to 40 percent of in-person outpatient consultations. Such progress will lead to saving resources and improving care for the poor and those living in remote areas. Moreover, e-health will increase access to quality consultation in remote areas of the country. Consolidating individual patients' lifelong medical history into an electronic health record (EHR) can help healthcare providers make more accurate diagnoses and lower the risk of medical errors. Some hospitals in India already practice evidence-based care, using digital platforms to give doctors and nurses access to the best recent research to supplement their clinical expertise. Bangladesh should target adapting such knowledge-sharing platforms across the country, encompassing medical education, private hospitals and clinics, and public healthcare service delivery facilities.

Education: It's being noted that National Educational Policy adopted in 2010 has given importance to the utilization of ICT for improving the quality and reach of education. In response to policy implementation, Master Plan for ICT in Education 2012-2021 has been prepared. Secondary education investment program has been implementing several activities to leverage ICT for education. Under the ICT in Education Program, notable signs of progress are: (i) 640 ICT learning centers (ILC) have been set up in 520 Schools, and 128 Madrasas, which are equipped with laptops, projectors, printers, etc., (ii) 150 e-Learning modules for Class VII & VIII have been developed, (iii) 7500 teachers have been trained, (iv) Two teachers from each participating academic institution were given training in foreign countries, (v) For central monitoring, a web-based dashboard has been prepared, and (vi) Awareness campaign has been running.

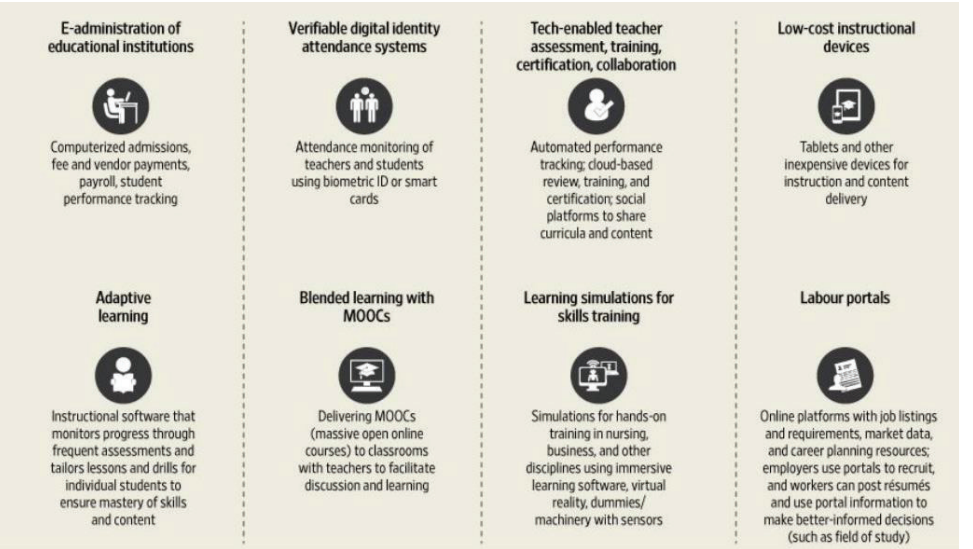
Figure 3: Leveraging of e-learning in Bangladesh is at very early stage



This humble beginning, as shown in Fig. 3, could be expanded further to exploit benefits from 08 significant areas, such as (i) e-administration of education institutions,

(ii) verifiable digital identity attendance systems, (iii) tech-enabled teacher assessment, training, certification, and collaboration, (iv) low-cost instructional devices, (v) adaptive learning, (vi) blended learning with MOOCs, (vii) learning simulations for skills training and (viii) labor portal. Further details of these areas are shown in Fig. 4.

Figure 4: Major building blocks for leveraging digital opportunities in education



It is worth noting that e-learning is not benign. In order to make optimal benefit from e-learning, the focus should be given on evidence-based fine-tuning of innovation and diffusion.

Lessons to be learned from already deployed e-learning centers. In-depth action research should be conducted on already deployed resources in 640 institutions for getting answers on relevant questions like (i) How are they being used? (ii) What is the implication on learning outcome?, (iii) What are limiting effective and efficient usages?, (iv) What is the engagement level of teachers and students?, (v) What are the scope of improvement and fine-tuning?, (vi) How is it contributing to soft-skill development? (vii) How is it affecting students' habits on reading, writing, analysis, and problem-solving? and (viii) How is it helping in performing exercises? In addition, the following questions should also be considered: (i) What is the effect on knowledge retention level? (ii) Is it expanding the desire and knowledge absorption capacity? (iii) How is it causing a distraction? (iv) What is its effect on collaborative learning? (v) How are power and internet failures limiting the utilization level? (vi) How are cost, access, and speed of Internet limiting factors? (vii) Can students access content from their home?, (viii) How will mobile-based access of content affect learning?, (ix) How is it empowering and engaging teachers?, and (x) What is its effect on performance assessment?

Some of the barriers to be targeted to address during the tenure of the 8th five-year plan are as follows: (i) Internet connectivity and bandwidth issues, (ii) Access, reliability and quality of electrical power, and physical infrastructure, and (iii) Quality content and optimum engagement of teachers, students, and assessment systems. On the connectivity front, just

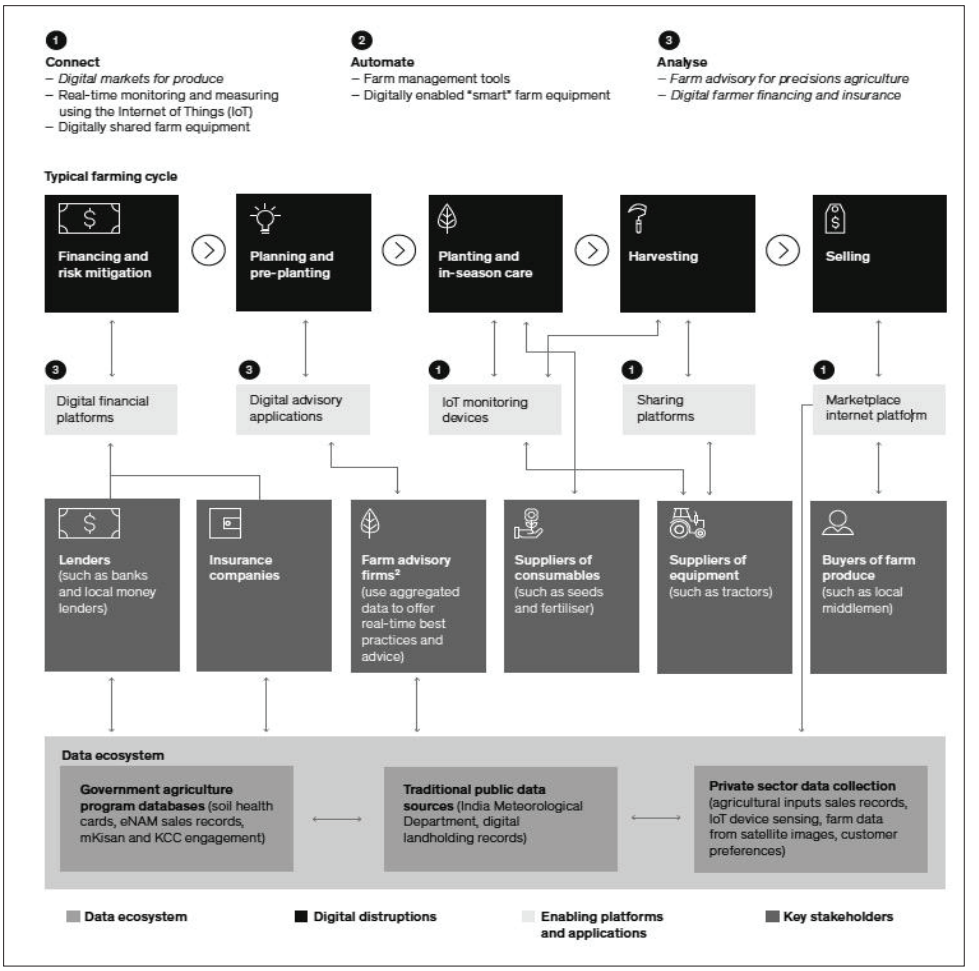
over 5 million wireline internet connections appear to be a significant barrier. High-cost of data on mobile Internet is a serious issue. High transmission network cost addition, limited access to WiFi, and low Internet speed should be addressed to leverage digital technologies in education. The further focus should be on issues pertaining to:

- High-Quality Digital Content—linked with Curricula, Culture, and Soft-Skills
  - Animation, Interactivity, AR/VR, Collaboration, Language
- Continuous assessment and facilitation of personalized as well as adaptive learning (data analytics and AI)
- Engagement of students and teachers for intuitive integration with learning habits.
- Engagement of teachers with professionals for content development and updating.
- Continuous improvement of content based on the learning from experience.

To maximize benefit from e-Learning, further pertinent issues deserving attention are: (i) Goal should be more than technology distribution, (ii) Often we fail to understand the learners, (iii) Information overload, (iv) Often lonely and isolating, (v) Lack of interactivity, (vi) Long, dull and boring, (vii) Generic and meaningless, (viii) Unresponsive and inflexible, (ix) Passive and uninvolved, (x) Low knowledge retention rates, (xi) Not appropriately evaluated, and (xii) Low completion rates at online learning platforms.

Agriculture: More than 40 percent of Bangladesh's labor force works in agriculture, which contributes about 15 percent of the country's GDP. Farms are small, averaging a little more than one hectare, and inefficient, with crop yields ranging from less than 50 to 90 percent of Brazil, China, Russia, and other developing economies. Many factors contribute to this. Bangladeshi farmers have a shortage of machinery and relatively little data on soil health, weather, and other variables. Digitization could reduce data and address yield. As shown in Fig. 5, the schema imagines how the agricultural landscape of Bangladesh could look in 2025 if digital applications were to be widely adopted. This would require an open and interoperable data ecosystem, clear guidelines about data ownership and usage, wide availability of broadband connectivity in rural areas, and digital literacy among farmers. Moreover, actors such as Bangladesh's agricultural research network and the department of extension services in producing and diffusing knowledge should be strengthened. They should be connected with firms innovating solutions and farmers using those innovations.

Figure 5: Farms of the future: making data-driven decisions from seeding to selling; adapted from Kaka, N. and others (2019)

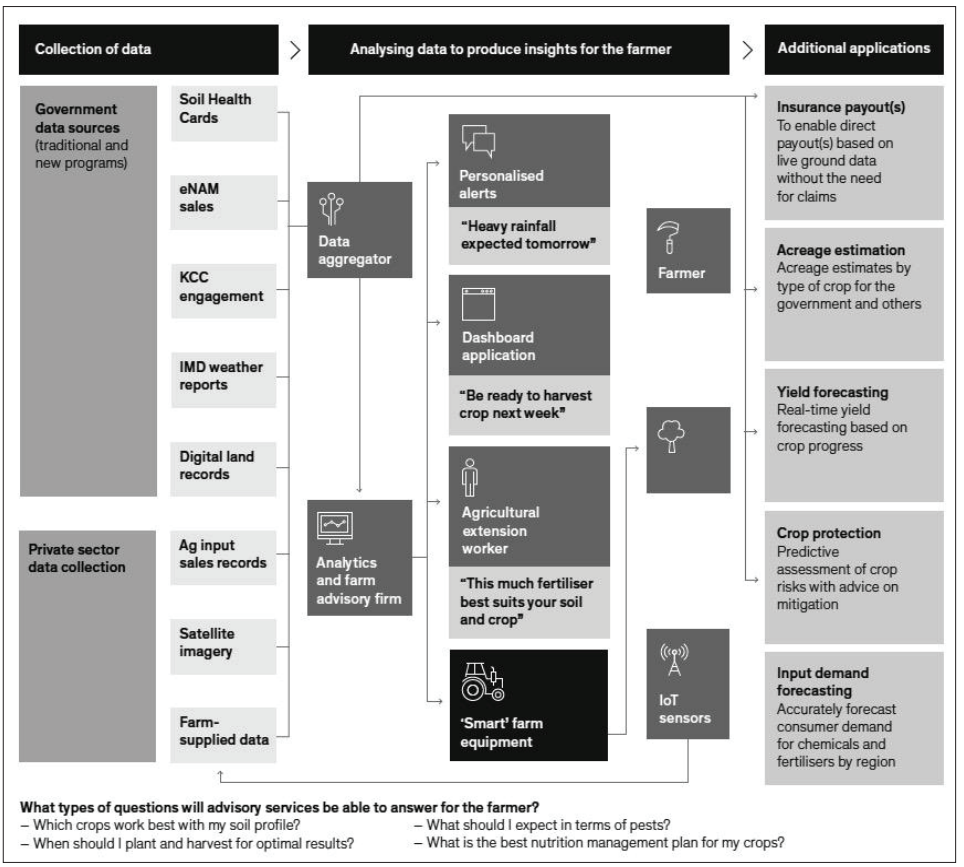


Digital technology can transform Bangladesh's agriculture ecosystem in several ways. Online bank accounts can provide the income and spending data that farmers need to qualify for cheaper credit from banks. Digital land-registry records could make crop insurance available to more farmers. Precision agriculture—delivering real-time data to farmers' mobile phones to help them optimize fertilizer, pesticide, and other inputs distribution through autonomous means using UAV—can increase yields by 15 percent or more (WEF, 2016 and IFDC, 2017). After harvest, farmers could use variants of online marketplaces for agricultural produce to transact with a larger pool of potential buyers.

Precision farming: Data to advise farmers on which crops to grow and the right amount of fertilizer and other inputs to use is the core capacity of precision farming. The increasing availability of real-time data from a variety of sources such as UAV-mounted sensors, satellites, and smartphone captured images can enable entities to offer customized advice to farmers, commonly known as "precision agriculture". Advice on achieving more

scientific practices can enable farmers to increase their productivity. Research finds that this envisioned scenario has the potential to improve as much as 40 percent in yields along with significant cost decreases. This envisioned precision farming scenario is shown in Fig.6, which could be targeted to realize by 2025. The low productivity and profitability of Bangladeshi farms are a serious concern. It could be partially solved by leveraging the potential gains from digital agriculture applications. For example, moving 40 to 60 percent of agriculture product sales to the online marketplace by 2025 is forecasted to increase prices paid to farmers by 15 percent.

Figure 6: Illustrative precision agriculture workflow enabled by digital technologies; adapted from Kaka, N. and others (2019)



4.7 Identifying the Scope, Challenges, and Way Forwards for Complete Digitization of the General Public Services Offered by the Government

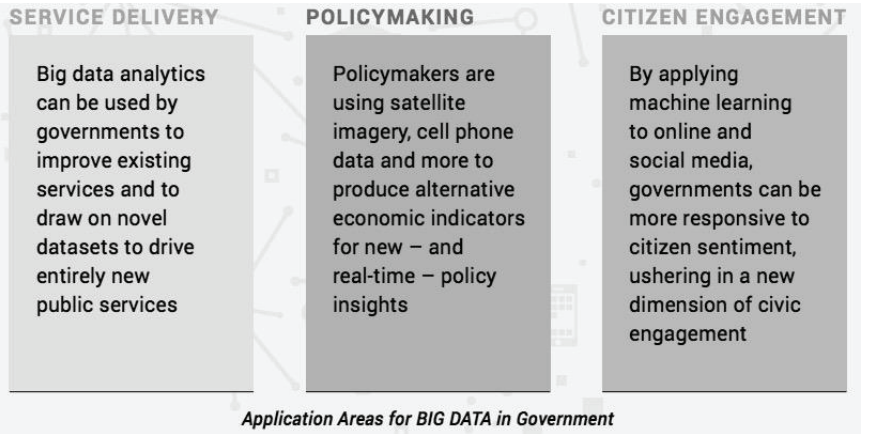
Over the last decade, there has been significant progress in digitizing public service delivery in Bangladesh. Such progress has promoted Bangladesh from 150 to 115 in the UN e-government ranking. The country has advanced 35 steps since the 2012 survey. Bangladesh ranked 124th, 148th, and 150th in the surveys done in 2016, 2014, and 2012 respectively. It's being reported that a2i has simplified 424 Public Services for better delivery. a2i developed Service Portal, also known as "Shebakunja", containing information about

citizen-centric services of various government organizations. So far, this portal covers 64 service profiles encompassing all primary government services.

Scope: It appears that ICT usage in such services is limited to essential computerization, connectivity, and mobile phone integration. To fully leverage unfolding opportunities, particularly big data, data analytics, and IoTs, Bangladesh should move to the next phase of digitization of public services.

For example, back-office automation of Bangladesh Road Transport Corporation activities helped check registration status, renew fitness certificates, and pay taxes online. The next phase of digitization should be expanded in monitoring driving practices in real life, offering warnings once reckless driving is detected, and offering pieces of evidence of real-life driving data to court for resolving disputes. For reaching the next phase of digitization of public service delivery, IoT features should be attached to relevant objects including motor vehicles, utility meters, rail networks, and many more. Data should be gathered in real-time and analyzed for gathering intelligence, which should be fed into the delivery of services. Such scopes have been expanded in clarifying the unfolding digitation opportunities in critical areas like health, agriculture, and education.

Figure 7: Example application areas of big data



The potential for big data to transform Government services is vast. The possibilities of big data solutions with applications in service delivery, policymaking, and citizen engagement are shown in Fig. 7 (WBG, 2017). For example, remote sensing data from satellites and UAVs, and ground-based sensors can provide a wealth of real-time or near-real-time information to monitor the provision and quality of public utilities such as water and energy. Similarly, ICT in education could be further leveraged to develop a platform that uses data analytics and data from student interaction and feedback to continuously troubleshoot educational processes and improve learning tools.

Challenges: One of the challenges has been to move towards the data-driven stage. Digital government transformation relies to a great extent on data-driven activities. The ability to collect, store, analyze, and share data using emerging technologies like IoTs is critical to improving service delivery. Available data can be used to improve decision-making and also lead to enhanced efficiency and generate external benefits. Cybersecurity, privacy,

and resilience collectively pose a severe challenge. Digital government progress must be matched by solid cybersecurity, privacy, and resilience efforts for users to develop and maintain trust in public sector online information and services. Cybersecurity is critical to safeguard personal data and requires cross-agency and international collaboration to meet growing threats. The human-centric aspect includes (i) capabilities, (ii) culture, and (ii) skills. Civil servants, ICT organizations and their contractors, and citizens should be empowered with needed capabilities and skills, and most importantly, with a culture of change.

Way Forwards: The concept of e-Governance should be updated for reaping the full benefits of the industry 4.0 technology stack. To proceed further, the focus should be on strengthening foundations for linking e-Governance with the digital economy agenda, including digital infrastructure, digital platforms, and solutions, as well as critical non-digital foundations such as legislation and regulations, leadership and institutions, environment for doing business and innovations, and necessary skills and partnerships. However, different digital environments and capabilities of agencies make it imperative for Government to recognize its digital status quo and set up a tailored digital strategy that fits best for its state. Digital government transformation comes with the need for adjustments, including legal, institutional, technological, and cultural changes. Therefore, high-level political commitment is critical to helping the Government make necessary reforms in a timely and effective manner. For leveraging synergy, it is recommended that governments exploit the potential of ICTs through coherent public sector-wide policies closely aligned with the broader national policies aimed at delivering the SDGs. In the 8th FYP, a digital strategy should be developed targeting each of 169 targets of 17 goals. Relevant indicators in guiding Bangladesh to move forward with the digitization of public services are shown in Table VI. Targets have also been proposed, which should be used as guidance in designing and implementing related projects during the implementation of the 8th Five Year Plan.

Table 6: Evolution of Bangladesh's e-Government Development Stages

Focused areas	Bangladesh's e-Government development stages over three significant periods					
	Till 2018		2020-2025		2031-2041	
Position in E-Government Development Index (EGDI), prepared by Department of Economic and Social Affairs of United Nations						
Indicators	Score (0-1)	Rank/193	Score (0-1)	Rank/93	Score (0-1)	Rank/93
E-Government Development Index (EGDI)	0.4862	115	0.65	80	0.74	40
Online Service Component	0.7847	NA	0.86	NA	0.90	NA
Telecomm: Infrastructure Component	0.1976	NA	0.54	NA	0.7	NA
Human Capital Component	0.4763	NA	0.73	NA	0.85	NA

4.8 Modeling Exercises to Identify the Amount of Resource Allocation in the ICT Sector for the Upcoming FYP Period and Tracing the Impacts of Policies

In 2017, Bangladesh's GDP was almost USD250 billion. It's estimated that Bangladesh's GDP will reach USD 463 billion by the end of 2025, growing at a rate of an average of 8%. In most global indices, data related to Bangladesh's investment in R&D and ICT innovation are not reported. But it appears that current investment (both public and private) in ICT, digital Bangladesh, and knowledge economy program is less than 1% of GDP. By

the way, at present public investment appears to be far higher than a private one. In the coming years, private investment should pick up to leverage the public investment made in infrastructure development, training, and other advisory services. In the 8th FYP, the focus of public investment should be to trigger private investment. This investment should keep growing, reaching 3 percent of GDP by 2025, as shown in Table 7. Target investments areas are shown in Table 8. The breakdown of public and private investments over 2021-2025 in different segments is shown in Table IX.

Table 7: Proposed investments in Digital Bangladesh, ICT and Knowledge-Economy

	2021		2022		2023		2024		2025	
	billion USD	% of GDP	billion USD	% of GDP	billion USD	% of GDP	billion USD	% of GDP	billion USD	% of GDP
Public Investment	1.4	0.4%	1.56	0.42%	1.8	0.45%	2	0.46%	2.1	0.45%
Private Investment	4.5	1.32%	6	1.63%	7.8	1.96%	9.6	2.23%	11.9	2.58%
Total Investment	5.9	1.72%	7.56	2.05%	8.76	2.2%	11.6	2.7%	14	3%

Table 8: Targeted Investment Areas

Sl	Focus areas	Intervention areas for investment and related ICT 2018 Policies
1	Domestic ICT infrastructure, connectivity, and cybersecurity	Rural connectivity; legal, regulatory, and awareness capacity development; FDI (Social equity and Universal Access, Section 3.3)
2	Public service transformation and delivery in digital space	Service innovation; deployment and operation; Technology Monitoring, Forecasting, and Planning; Cloud Infrastructure and Cyber Security (Digital Government & Security, Section 3.1&3.2)
3	Software and process innovation for the domestic market	Strengthening both supply and demand of ICT innovations for the domestic market; Cloud Infrastructure and Cyber Security (Strengthening Domestic Capacity, section 3.6; Enhancing Productivity, 3.8)
4	IT-enabled service (ITES) delivery, and BPO (including freelancing)	Rural internet connectivity, speed, and cost; trained HR; (Strengthening Domestic Capacity, section 3.6;)
5	IT hardware device and component manufacturing	High-tech park and trained human resources; promotion for attracting foreign direct investment (FDI). (Strengthening Domestic Capacity, section 3.6;)
6	IT hardware design, redesign, and innovation	Technology Monitoring, Forecasting, and Planning; R&D and Human capital; establishing linkages between actors; startups; FDI (Education, Research and Innovation, Section 3.4; Skill Development and Employment Generation, Section 3.5)
7	Software innovation and service to the export market	Technology Monitoring, Forecasting, and Planning; R&D and human capital; establishing linkages between actors; startups; FDI (Strengthening Domestic Capacity, section 3.6;)
8	Internet of Things, smart devices, and connected society	Technology Monitoring, Forecasting, and Planning; R&D, lead users, and domestic backbone infrastructure; establishing linkages between actors; startups; updating of access networks (4G/5G) (Enhancing Productivity, 3.8)
9	Robotics, Automation, and Smart manufacturing	Technology Monitoring, Forecasting, and Planning; R&D and human capital; establishing linkages between actors; startups (Enhancing Productivity, 3.8)
10	ICT based smart farming, food processing, and primary industries	Technology Monitoring, Forecasting, and Planning; R&D, startups, lead user; establishing linkages between actors (Enhancing Productivity, 3.8)

Table 9: Breakdown of proposed investment targeting different segments over 2020SL025

SL	Focus areas	Public Investment, in USD billion					Private Investment, in USD billion				
		2021	2022	2023	2024	2025	2021	2022	2023	2024	2025
1	Domestic ICT infrastructure, connectivity, cloud, and cybersecurity	0.1	0.1	0.1	0.1	0.1	1.3	1.2	1.2	1.2	1.2
2	Public service transformation and service delivery in digital space	0.2	0.2	0.2	0.3	0.3	0.1	0.2	0.3	0.4	0.5
3	Software and process innovation for domestic market	0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.4	0.5	0.5
4	IT enabled remote service delivery, and BPO	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.6	0.7
5	IT hardware device and component manufacturing	0.1	0.1	0.1	0.1	0.1	1	1.7	2.6	3.6	5.2
6	IT hardware design, redesign and innovation	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.5	0.6	1
7	Software innovation and service for export market	0.1	0.1	0.1	0.1	0.1	0.3	0.4	0.6	0.7	0.8
8	Internet of Things, smart devices and connected society	0.1	0.2	0.3	0.3	0.3	0.3	0.5	0.7	0.8	0.8
9	Robotics, Automation, and Smart manufacturing	0.2	0.2	0.2	0.2	0.3	0.5	0.6	0.6	0.6	0.6
10	ICT based smart farming, food processing and primary industries	0.3	0.36	0.4	0.4	0.4	0.2	0.5	0.5	0.6	0.6
11	Total investment in $billion	1.4	1.56	1.8	2	2.1	4.5	6	7.8	9.6	11.9

4.9 Optimal Sectoral Policies, Given the Objectives to be Reached by 2025

In this regard, National Information and Communication Policy 2018 offers a broad policy guideline (ICT Policy, 2018). To complement it, here are a number of areas where policies should be optimized.

Device Manufacturing, Redesign, and Innovation: The growth of the domestic market of ICT devices, particularly mobile handsets, has opened the opportunity for local assembling and manufacturing. To leverage it, the Government has changed the import duty structure on mobile handset components and finished handsets, offering as high as 57 percent tax differentials to local assemblers. But due to decreasing labor requirement in assembling and manufacturing details, reaching below 10 percent of the cost of production, the labor-based value addition strategy of import substitution is losing its attractiveness. Policies should be updated in giving incentives for adding value through ideas. Ideas should be leveraged in redesigning existing handsets and innovating new ones, so that perceived value increases and cost decreases.

Education, R&D, Human Capital, and Knowledge: To support local value addition through ICT ideas, policy should focus on supporting effective R&D. Commercial opportunity-focused R&D should be leveraged for addressing the quality of education, human capital, and knowledge supply issue. Relevant policies should focus on the system and directional failures, as opposed to supporting a linear model of innovation.

Creating the demand for Knowledge and increasing knowledge absorption capacity: Existing policy framework supports the technology import-based value addition through local labor and raw material. Policies should be updated in creating the demand for knowledge at the firm or intuition level. Incentives should be provided for acquiring knowledge and transferring it into the product as well as process innovation.

Increasing interaction between knowledge actors: To leverage the knowledge economy around ICT and digital Bangladesh, policies should be updated to strengthen the network between knowledge generators and innovation actors.

Focus on local innovation: It has been observed that Bangladesh has been focusing on the usages of imported ICT innovations. Notably, in e-Governance projects, the focus should be on fostering innovating solutions around imported components. Policy update to change this focus will increase both demand and creation of knowledge and quality human capital.

Increasing competition in connectivity and service space: It appears that connectivity space, including mobile communication and nation-wide backbone network, is suffering from weakening competition force. To address it, the focus should on updating policy and regulatory framework to intensify competition in private investment, as opposed to increasing public investment.

Expanding export base: Despite having high potential and recent growth, Bangladesh's success in exporting ICT goods and services is less than expected. To address it, policy should be directed to idea-based value addition to complement wage arbitrage. On the one hand, Government should be the lead user supporting local capacity of innovation. On the other hand, local knowledge and human capita supply capacity should be increased.

4.10 Benchmarking and Target Setting for ICT Skill Development, the Intensity of ICT Usage, and ICT Related Exports

To benefit from the knowledge economy in the ICT sector, Bangladesh should target to make further improvements in skill, ICT usages, and ICT-related exports, particularly for reaching the development target of 2030 and 2041. The technology stack powering the knowledge-intensive digital economy is very powerful to support innovations for both efficiencies, incremental and disruptive. For example, UAV-based precision farming alone has the potential of reducing wastage of inputs and increasing yields of agriculture by above 20 percent. Similarly, machine vision technology has the potential for lowering fabric wastage and improving quality in ready-made garments making. On the other hand, turning buses and trucks into connected IoT devices over the 5G network has the possibility of substantially reducing road accidents, which roughly causes a 2 percent GDP loss.

Similarly, artificial intelligence-based smart feeding can lead to a 20 percent reduction of feed cost in producing fish and poultry. But to turn these opportunities into economic outputs and high-paying innovation jobs, local innovation capacity enormously matters. According to the Global innovation index 2018, published by WIPO, INSEAD, and Cornell University, Bangladesh's ranking is 116 among 126 countries (GII, 2018). Bangladesh's position in some of the critical indicators (as shown in Table 10), as shown below, needs to be addressed. In this table, some targets have been proposed to meet over the implementation of the 8th FYP.

Table 10: ICT Intellectual Assets and Human Capital for Knowledge-Economy

Focused areas and Indicators	Bangladesh's evolution stages over three significant periods					
	Till 2017		2020-2025		2031-2041	
Global Innovation Index, 2018						
	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-100)	Rank
Patents by origin/bn PPP$ GDP	0.1	106	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	2.2	49	15	35	25	20
Scientific & technical articles/bn PPP$ GDP	2.3	108	10	50	15	35
Researchers/mn pop	n/a	n/a	4000	50	5,000	20
Citable documents H index	10.2	61	20	40	35	25
Intellectual property receipts, % total trade	0	95	0.4	50	0.7	40
Graduates in science & engineering, %	11.3	89	20	25	30	12
Tertiary enrolment, % gross	17.3	93	50	50	80	15

Despite recent growth in ICT export and usages, Bangladesh is mainly at the bottom of related indices. But to meet the development aspiration by 2030 and 2041, Bangladesh's position should be sharply improved. Proposed progress targets have been shown in Table 11.

Table 11: Bangladesh's Uplifting in ICT Goods and Services Production, Consumption and Export

Focused areas and Indicators	Bangladesh's evolution stages over three significant periods					
	Till 2017		2020-2025		2031-2041	
Global Innovation Index, 2018						
	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-100)	Rank
High-tech net exports, % total trade	0.2	92	10	50	20	10
ICT services exports, % total trade	1.2	79	5	40	10	8
Knowledge-intensive employment, %	8.7	101	15	60	30	35
Computer software spending, % GDP	0.2	77	0.4	55	0.5	40
High- & medium-high-tech manufactures, %	0.1	77	0.4	55	0.5	35

In the Global Competitiveness Index, Bangladesh's position in indicators related to ICT skill, export, and intensity of usages appears to be also within the bottom bracket, as shown in Table 12. To reach developed country status, Bangladesh needs to progress in these indicators, placing herself among the top 30 countries.

Table 12: Bangladesh's Position in Key Indicators of Global Competitiveness Index

SL	Relevant indicators used by Global Competitiveness Index 4.0 2018	Bangladesh's position among 140 countries
1	Intellectual Property Protection	119
2	Internet users as a percent of the population	122
3	Skillsets of graduates	121
4	Digital skills among the population	120
5	Critical thinking in teaching	104
6	Venture capital availability	98
7	Growth of Innovative companies	97
8	R&D expenditure as % of GDP	72
9	Patent applications per million population	106
10	Companies embracing disruptive ideas	108

Agility--To assess the readiness of Bangladesh to leverage the knowledge-intensive creative part of the digital economy, we should look into the agility in the domestic market competition and entrepreneurial culture. The agilities imply the capacity for "creative destruction", allowing innovative companies to emerge against incumbents and rewarding a risk-taking attitude. The agility in pursuing disruptive innovation also depends on public-sector performance as an appropriate level intervention of bureaucracy makes it easier for businesses to re-organize and re-invent themselves.

Innovation Ecosystem--The broader innovation ecosystem plays a vital role. Although business dynamism and innovation capability are the factors impacting innovation more directly, these need to be complemented by high levels of human capital (health, education, and skills); optimal allocation of skills (labor market functioning); and availability of venture capital and ad-hoc financial products (financial system development). A robust innovation ecosystem also presumes sound infrastructure, ICT readiness, and institutions that allow ideas to flow and protect property rights and a large market size that incentivizes the generation of new ideas.

Human Capital---It includes not only skills but also health: health is thought of as a state of complete physical, mental and social well-being, not merely the absence of disease or disabilities. To thrive in the digital economy, education plays a vital role in addressing the skills. The Labour market situation, including measures of talent reward and respect of workers' rights, and the innovation capability, which includes measures that capture human collaboration, interaction, and creativity, play essential roles in developing human capital to leverage digital Bangladesh.

To leverage digital Bangladesh, current position among 140 countries, Global Competitiveness Index 4.0 2018, of following indicators should be substantially improved:

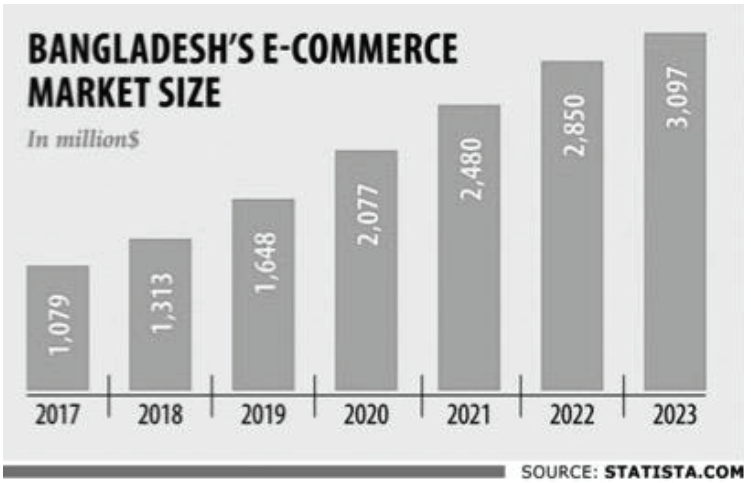
Table 13: Bangladesh's position in innovation capability and business Dynamism

Innovation capability	Business Dynamism	Financial System	Labor market	Product market	Skills
102	120	103	115	123	116

4.11 Review of e-Commerce Status of Bangladesh and Ways of Breakthroughs

The e-commerce market encompasses the sale of physical goods via a digital channel to end-users. Like many other countries, growing smartphone penetration with 3G/4G network and rising purchasing power of consumers are propelling the e-commerce industry in Bangladesh. It's being reported that a recent study conducted by a research firm, Bangladesh's e-commerce market stands at $1.6 billion currently and will double to $3 billion by 2023, as shown in Fig. 8. In terms of e-commerce revenue, Bangladesh is ranked 46th in the global ranking, according to Statista. Electronic products, furniture, toys, and household appliances are dominating the online trade. It has been reported that thousands of women entrepreneurs now run businesses through Facebook, generating hundreds of crores of taka revenue.

Figure 8: Growth trend of Bangladesh's e-commerce sector



At present, online shop owners only consider selling physical goods as e-commerce. In reality, services such as rideshare, app-based food delivery, and e-ticketing are all part of e-commerce, but they have not been considered in recently released estimates.

UNCTAD's assessment of the country's readiness to engage in e-commerce finds that Bangladesh has laid down an excellent digital foundation and is striving to prepare its citizens for the digital future. As quoted in the media, "Bangladesh is fertile ground for e-commerce to take root and benefit companies and consumers alike," said Shamika N Sirimanne, director of technology and logistics at the United Nations Conference on Trade and Development (UNCTAD), in July this year (Islam, Z. 2019).

The advent of logistics companies to support e-commerce has been playing a pivotal role in reducing entry and expansion barriers. Moreover, the growth of 3rd party logistic companies is also offering scale and scope advantage, resulting in lowering cost. There appears to be a lack of innovation and intellectual assets among local e-commerce companies. The e-Commerce industry has a natural tendency of monopoly due to the economies of scale, scope, and network externality effect. Despite the growth of revenue, it has been learned that most of the online platforms are running at a loss. One of the reasons is that customers

are not willing to pay extra, covering the delivery expenses. On the other hand, due to weak intellectual assets (IA), entrepreneurs are failing to lower costs and improve quality out of IA. Moreover, there appears to be negligible trade in perishable good segments, which are mostly produced in rural Bangladesh by millions of family farms. Further progress needs to be made in expanding e-commerce in connecting millions of rural producers to city dwellers. In addition to logistic services, progress should be made in packaging and logistic innovations so that fresh food, including live fish, could be safely delivered directly to consumers' doorsteps. Progress in this area will contribute to several targets pertaining to goals of sustainable development, such as:

1.1 Eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day.

12.3 Halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

10.1 Progressively achieve and sustain income growth of the bottom 40 percent of the population at a rate higher than the national average.

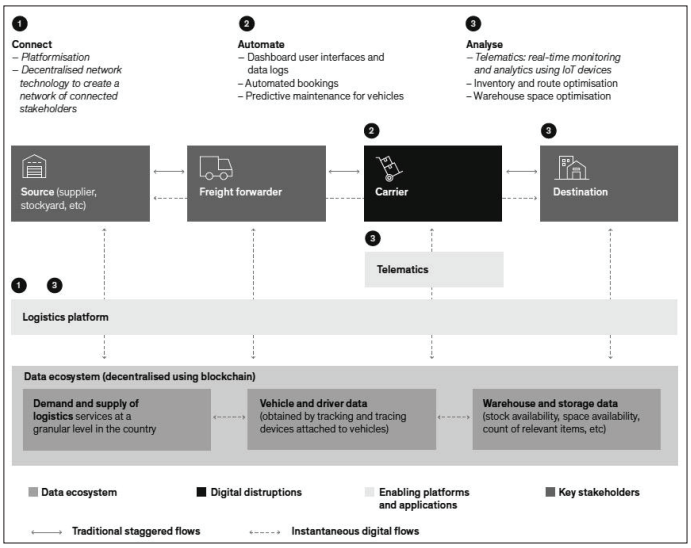
Companies like Amazon and others have been making significant investments in generating intellectual assets and leveraging them to innovate in these areas for improving the quality and reducing the cost simultaneously. But unfortunately, Bangladeshi e-commerce start-ups are not active in exploiting the opportunity of continued innovation to make e-Commerce a solid substitute for conventional means. To succeed in exploiting the potentials of e-commerce, the focus should be given to generating intellectual assets and fueling innovation around them across the whole value chain for continuously improving the quality and reducing the cost. Despite its invisible role, intellectual assets appear to have a vital bearing on the success of e-commerce startups to attain profitability.

Despite having many positive effects, e-commerce also has a downside, particularly in the environment. Food delivery is now a new source of plastic waste. With China's lead, major cities worldwide have started to experience astronomical growth of waste out of takeout containers, utensils, and bags. For example, in Dhaka, 20,000 food orders are delivered a day, and the volume increased ten times in just over a year. Both the local and global startups are highly active on the scene, often clogging city traffic with motorbikes rushing with food delivery orders. The growing plastic waste production of online food delivery may also warrant examining and estimating the costs of climate change, requiring prohibitive intervention like imposing a carbon tax or making eco-friendly packaging mandatory. The sustainability of development has been a burning issue. We look for next-generation technologies for reducing environmental damage and driving economic growth simultaneously. ICT has been a hope for offering us the alternative to existing technologies in reducing environmental damage and driving economic development simultaneously. Despite having many good examples of going green, plastic waste created by food delivery apps is a serious concern. It's neither offering innovation in making food better or cheaper nor making the environment cleaner. It is instead nurturing lazy habits and creating a lock-in effect for churning out a profitable business -- at a high cost on the environment.

To leverage e-Commerce further, the focus should be given to developing smart mobility and logistics. An envisioned scenario is shown in Fig. 9. Private logistics firms such as 'Track Lagbe' also are rolling out digital solutions to streamline operations. These include

moving freight booking online, automating customer service, installing tracking devices to monitor truck and cargo movements and increase productivity, leveraging real-time weather and traffic data to map the most efficient routes, and equipping trucks with internet-linked sensors that alert dispatchers when a vehicle needs maintenance. According to estimates made by an international consultancy within developing economies, digital interventions that result in higher system efficiency and better asset utilization can reduce logistics costs by 15 to 25 percent, which is a critical factor for on-time delivery and cost reduction for success of e-Commerce. Efficient and also less costly logistics will also contribute to lowering wastage of farming outputs and also the cost of delivering them to consumers.

Figure 9: Logistics in the future: digital technologies allow supply-chain consolidation and analysis, supporting e-Commerce and reducing wastage of farming outputs; adapted from Kaka, N. and others (2019)



Despite the recent spike in e-commerce trade, according to a recent study, in comparison to the 16 percent global average of online trade, Bangladesh's 1.0 percent online trade is insignificant. High cost of bandwidth, lack of trust, weak logistics support, and payment mode are among significant barriers (FE, 2019). It's being reported, "e-retailers are not keen on accepting even national payments through cards because of a 3.0-4.0 percent commission to banks, relative to the cash-on-delivery mode."

4.12 Strategies for Making ICT Services Available to the Citizen at a Reasonable Cost

Three significant objectives for telecom policy and regulation are to benefit from economies of scale and scope to reduce cost, to minimize deadweight loss to maximize social benefit, and to promote innovations to benefit from dynamic competition. The core challenge appears to be the fact that progress in achieving the first objective leads to the creation of monopolistic power, which reduces competition and discourages new entry contributing to deadweight loss. A delicate balance needs to be attained to maximize both consumer and producer surpluses. The vertical segmentation of the industry partially addresses this challenge.

Unless there is a strong case of the economy of scope, no operator should be allowed to enter in more than one segment. For example, a cellular operator does not need to join in the application or transmission service business to benefit from economy of scope. Downstream or upstream service concerns should be handled following appropriate regulations. The policy of allowing an operator to enter into multiple segments to address quality or capacity issues must be avoided. Such entries will allow monopolistic market power accumulation through several means, including predatory pricing and increasing entry barriers. Bottlenecks in the chain should be dealt with by issuing a new license, updating rollout obligation, regulating service quality, catalyzing access to resources, and facilitating demand creation and aggregation.

Due to economies of scale and scope and network externality effect, the ICT service industry has a natural tendency of monopoly. To benefit from innovation and capital flow out of market-led growth of ICT service, the regulator needs to make a trade-off between the long-term competitive functioning of the market and the short-term customers' bills for telephone/ICT services. But such a trade-off should increase possibilities of profitable competition scope for smaller operators and reduce the cost of service for customers. Notably, the cost of telecom service residing at the bottom of the income pyramid should be seriously taken into consideration in taking any regulatory measures. BTRC should continuously do research on assessing the implications and adjusting the limit, and also exploring other price limiting options, so progress is increasingly made in significant policy objectives of the market-led delivery of cost-effective telecom services. The regulator should share analytical findings in an objective and also in an understandable manner, particularly with the customers, about the way sustainable progress is being made by capitalizing on the competition force in offering increasingly higher quality telecom service at a lower cost.

On the other hand, the economy of scope of facilities, owned by any operator, should be exploited by opening access. Intra-segment competition should be optimized to benefit from economy of scale and minimize deadweight loss. To benefit from innovation, new entries should be facilitated, and competition should be optimized.

Prevailing policies and regulations appear to be suboptimal. The data of local context as well as experiences of other countries need to be gathered and analyzed within sound models to derive insights and compare options to take the most effective policy and regulatory decisions. On the one hand, the price-setting capability of private operators should be avoided. On the other hand, the Government's approach of being the substitute to private investment must be avoided at any cost.

4.13 Strategies to Avert the Adverse Influences of ICT on our Population, Especially the Young Generation

It's being reported that although most children who are online are viewed it as a positive experience, many parents and teachers worry that immersion in screens is making children depressed, creating internet dependency, and even contributing to obesity (UNICEF 2017).

For a long time, telephone density (teledensity) used to be considered as an important indicator of development. In the 1970s, most of the advanced countries attained more than 90 percent teledensity. On the other hand, in most developing countries, it was less than 3.0 percent. Even in the mid-90s, teledensity in India was around 1.0 percent. During that time,

Bangladesh had less than 1 million telephone lines for 140 million people. But the advent of the mobile phone and market-led reform speedily changed the scenario. Rapidly mobile phone penetration increased, reaching over 70 percent by the end of 2010 in most of the developing countries. Easily accessible and affordable mobile phones served the critical purpose of communication connecting even remote villages of developing countries with the global community.

Over the years, the mobile phone handset has grown from a primary communication device to a multipurpose gadget, taking the new name: the smartphone. And upon being connected with the Internet, it has also opened the window of diverse contents and services. Consumption of some of the contents and services through smartphones over mobile broadband has been found to be counterproductive and addictive in nature, raising serious concern.

Research findings have started to uncover shocking facts: smartphones are draining our brains. The results have been revealed by a group of researchers from the McCombs School of Business at the University of Texas, Austin, USA. They conducted experiments with nearly 800 smartphone users to measure its impact on creativity and cognitive capability. It was found that just having a phone within easy reach reduces peoples' ability to focus and perform tasks. "The mere presence of their smartphones was enough to reduce their cognitive capacity," said a researcher.

Due to the continued delegation of manual jobs to robots, the demand from human workers for creative and cognitive skills (such as problem-solving and action planning, and creative expression, linking creativity to action) is on the rise. But the smartphone has been draining our cognitive ability; particularly, the young generation is highly vulnerable to the usages of the smartphone, which have been found to be addictive in nature. In an open letter, two significant investors of Apple have pointed to numerous studies which suggest excessive phone use can disrupt lessons, harm students' ability to concentrate on school work, and deprive them of sleep. It has also been mentioned the impact of "heavy use" of social media on self-esteem and its potentially strong influence to cause childhood depression.

As a human race, creative and cognitive capabilities are our most powerful strategic tools to deal with unlimited challenges to support our progression. Increasing erosion of this capability caused by smartphones is a grave concern. Many of the mobile game makers are using smartphone features to design virtual living-like characters (with a sense of environment) to attract the attention of teenagers, even kids-- making them virtually addicted to those games. Smartphone apps are addictive by design. They take advantage of human weaknesses to ensure our constant attention-taking control of innate psychological biases and vulnerabilities. The ad-view-based revenue model is driving the innovation of apps, sites, and devices to be as addictive as possible to increase the number of users. Children are increasingly being targeted as the next generation loyal (addicted) users.

Expressing concern on the long-term impact of technology such as smartphones and social media on children, former Facebook President Sean Parker described the site as made to exploit the human vulnerability, saying: "God only knows what it's doing to our children's brains." Several studies have revealed adverse effects on children's mental and physical health caused by excessive use of smartphones and social media that range from distractions in the classroom and to risks of depression, even suicide. It's pretty disturbing to note that to diffuse such addictive behavior, some mobile operators in developing countries are

offering Facebook-type social media access over mobile networks virtually free.

Should we take serious steps against this socially acceptable addiction, destroying the intellectual capability of the next generation? Social media addiction and pornographic entertainment among the youths appear to be the critical driver of growth of global Internet traffic-- as high as 45 percent annually.

Often smartphone density and mobile Internet penetration are considered the success factors of progression, particularly in developing countries like Bangladesh. While there is no arguing the point, it is true that with increased mobile penetration, the downside of smartphone and mobile broadband is also taking an alarmingly heavy toll. Reflecting on this incredible impact, a report published in The Economic Times of India says, "Psychiatrists and counselors say that the number of people being treated for mobile addiction -- mostly students in the age group of 13-24 -- has shot up anywhere between 75-100 percent and above in the last one year alone -- and looks likely to jump multifold in the coming years." Meanwhile, the Chinese Academy of Social Sciences said that university students used mobile phones for 5 hours every day, which accounts for 22 percent of the whole day.

There is fear among experts that mobile addiction is only likely to get worse as smartphone penetration deepens along with the increase in data consumption. For example, in Bangladesh, the smartphone penetration rate grew by 33 percent in 2016, so did the Internet data consumption growth -- reaching 486 Gbps in Sept 2017 from 186 Gbps in Dec 2015.

Should we be happy or concerned with such a growth pattern? Although mobile phone penetration significantly addressed the communication needs quickly, smartphone-centric mobile Internet is creating severe concern due to its non-productive usage. There is no denying that smartphone and mobile broadband have significant potential to address our pressing development issues. But the prevailing scenario calls for regulatory actions and social capacity development to counter the negative consequences.

Strategy to reduce the negative effect: Some of the strategic options are:

(i) Students and parents should be made aware of the adverse effects of over usages of electronic gadgets.

(ii) Addictive as well as emotionally sensitive digital contents and features of apps and games inducing additive association could be regulated.

(iii) Usages of smartphones, tablets, and gadgets in classrooms could be highly regulated.

(iii) Parents and teens need to be informed about engaging with the online world. Parents can ask their teens to show them how they use social media and what it is.

(iv) The speed as well as the tariff of Internet usages from 11 pm to 6 pm could be regulated too.

4.14 Analysis of How Knowledge Economy can be Established in Bangladesh and Identifying Channels Through Which It will Affect the Growth Path of the Economy

The knowledge economy has more than one interpretation. Within the context of development planning for making Bangladesh a developed country, we should focus

on producing economic outputs out of knowledge. In doing so, we should increase the capability of absorbing, adapting, and creating knowledge supporting product and process innovation for improving the quality and reducing the cost of our productive outputs. To make progress along this line, Bangladesh should carefully figure out the strategy. It's worth noting that there is no natural correlation between relevant indicators like science and technology graduates, R&D allocation, publications, and patents, and economic growth. To leverage these indicators to drive economic growth out of knowledge, Bangladesh must address system failure. Despite the importance of knowledge, Bangladesh's existing policy framework does not encourage firms to acquire knowledge and transfer it into economic output.

Create Demand for Knowledge: So far, Bangladesh has been pursuing a capital machinery import-centric labor-based value addition strategy through replicating and imitating economic outputs. The government has been adjusting taxation, duties, incentives, and bank finance, and also making an investment in infrastructures for creating profitable, productive opportunities out of labor and natural resources. There does not appear to be incentives in pursuing the knowledge-based value addition in improving products and processes. As a result, at the firm level, demand for outside knowledge and the capacity to absorb and innovate appears to be extremely low. It seems that Bangladesh's broad policy framework encompassing education, R&D, industry, trade, and economic development is responsible for system failures in harnessing innovation that include shortcomings in the capabilities of actors – notably firms and knowledge actors – learning, linkages, and networks of actors.

Address System failure: Higher academic institutions and BCSIR are often pursuing research to understand that scientific knowledge generated out of research will lead to innovation, driving economic growth and jobs. Although Bangladesh has been allocating a meager budget for R&D, such a linear, science-push model of the invention has not succeeded in creating successes stories. Recent findings suggest that knowledge production does not lead automatically to innovation but needs absorptive capacity and demand for knowledge of the industry. In leveraging innovation, it appears that Bangladesh is suffering from system failures that include shortcomings in the capabilities of actors – notably firms and knowledge actors – learning, linkages, and networks of actors, as well as the framework conditions of the enabling environment including regulatory and policy frameworks. Like other developing countries (Lundvall et al. 2009; Chaminade and Padilla-Perez 2014), it is precisely the link between firms, entrepreneurship, universities, and R&D centers like BCSIR that are missing in Bangladesh.

4.15 Judgment on the Impact of Technical Progress Including ICT on Output, Employment, Incomes of Households, and their Wellbeing Should be Made

Economic Output: Technology progression supports innovating new products, simplifying productive tasks, and increasing the comparative advantage of machines in taking over productive roles from the human. The economic outputs of a country depend on the capability of that country in taking advantage of technology in adding value to a globally connected, competitive value chain. As technology kept simplifying tasks opening the opportunity for low-skilled workers to add value, Bangladesh benefited from such role technology progression in increasing economic output. It appears that further advancement of technology will keep closing this opportunity for Bangladesh. Bangladesh should focus on the innovation aspect for increasing competitiveness by blending labor advantage with technology innovation.

Employment: The technology progression is strongly coupled with the transformation of the job market and changing the nature of jobs. Despite the displacement effect, over the last three industrial revolutions, technology progression led to the creation of more jobs. Most importantly, technology progression kept simplifying productive tasks, opening the opportunity for low-skilled labor to add value in economic outputs. Due to such an effect, Bangladesh got blessed with 4 million manufacturing jobs in the export-oriented RMG sector. It's now widely speculated that manufacturing tasks requiring mostly innate capabilities are now the target of automation in the age of the fourth industrial revolution.

On the other hand, the technology stack driving the fourth industrial revolution also opens innovation opportunities, creating new tasks and employment opportunities. The net effect on Bangladesh will depend on the strategies and policies being pursued by Bangladesh to cope up as well as leverage technology progression. Likely, Bangladesh's current technology import-driven strategy for adding value through labor and raw material will keep weakening with the progression of the fourth industrial revolution. It's already being learned that the RMG sector has been suffering from job loss due to automation, and women are worse suffer than men.

Income of households: The income of households depends on the earning capability of a family member and returns on the investment. Almost 50 percent of households in Bangladesh have family firms. Adoption of technologies in those firms has the potential to increase income. But the challenge is to ensure the growth profitability and yield simultaneously. On the other hand, there has been decreasing trend of salary among university graduates. This is primary due to the likely fact that Bangladesh has not focused on transferring the mental capacities of graduates into economic outputs. Until and unless Bangladesh progresses along this line in leveraging technology, there is a risk that household income growth may slow down.

Wellbeing: Wellbeing depends on the usage of technology in getting the job done better and earning. With the progression of digitization of services, it's getting easier to get certain jobs done better with greater ease. But there is a risk that further advancement of technology may lower the income level. Such reality demands Bangladesh to pay serious attention to coping up as well as leveraging technology progression.

4.16 Examination of Other Issues Relevant to ICT as it Unfolds in the Next Five Years

Antitrust: It's related to acquiring market power for attaining price-setting capability. Antitrust laws are regulations that monitor market power accumulation, regulate anticompetitive behavior for making sure that healthy competition is allowed to flourish and economies can grow. In the local market, GP has already attained significant market power. The mobile financial service market is also suffering from weak competition due to the dominant position of bKash. On the other hand, global digital platforms like Google and Facebook have been monopolizing the local advertisement market. Bangladesh's total advertisement market size is worth USD150 million. It's being reported that companies in Bangladesh are spending nearly USD 100 million every year for digital marketing on the platforms of Facebook and Google to reach their target audience. Already, the European Union has been slapping fine to Google, reaching $10 billion, for abusing its dominant position. With the growth of the digital economy, the urgency of monitoring and regulating market power accumulation and its abusive practice has become paramount.

Data Privacy: It's concerned with the proper handling of data – consent, notice, and regulatory obligations. Whether or how data is shared with third parties and how data is legally collected or stored are significant concerns, among others. With the growth of popularity of social media, e-commerce, telemedicine, cloud-based backup, and e-Government services, citizens are often sharing sensitive data. How citizens are being protected from unauthorized usages of data should be looked upon. Among other digital platforms, Facebook has been highly popular among Bangladeshis. It has been learned that the Federal Trade Commission of the USA has fined a Facebook record $5 billion for violating consumers' privacy, which is almost 20 times greater than the largest privacy or data security penalty ever imposed worldwide. On the other hand, wearable devices are opening innovation as well as data privacy issues. Formulation of appropriate regulatory guidelines and their practice should be ensured for protecting Bangladeshi citizens from malpractice in data usages.

Inequality: Digitization of services is demanding up-skilling of users. Particularly women above 50 years old are facing difficulty in access digital services over smartphones. On the other hand, local business opportunities are being taken over by global players through digital platforms. For example, Bangladesh's local advertisement revenue has basically been taken over by Google and FB. Moreover, these dominant platforms are also abusing their market power in creating barriers to innovation. The digital economy report (UNCTAD, 2019) says, "wealth creation in the digital economy is highly concentrated in the United States and China, with the rest of the world, especially countries in Africa and Latin America, trailing considerably far behind." It's the apprehension that the control of dominant global players on data, as well as their capacity to create and capture the ensuing value, will only accentuate the concentration and consolidation of their dominance rather than reducing inequalities between and within countries.

Increasing public Investment: Increasing public investment in the ICT sector runs the risk of weakening the competition force, slowing down the flow of private capital, and discouraging risk-taking investment for innovation.

Correlation between ICT Spending and Economic Growth: There has been the overarching belief that there is a strong correlation between ICT spending and economic growth. But the return on investment varies. Analytical work should be undertaken to assess like RoI for prioritizing investments.

5. Suggested Strategic Dimensions

The critical success factor is the creation and demonstration of a scalable model of profitable exploitation of Digital Bangladesh Agenda, ICT, and Knowledge Economy through the investment made for infrastructure, R&D, and innovation, and adopting policies for creating the demand of scaling up this model by the private sector. The overall strategy is to (i) make the Government competent lead user of digital innovations in meeting line ministries' targets, (ii) strengthen the supply side of physical infrastructure, (iii) develop human resources, and prime the knowledge creation and exploitation through R&D, (iv) encourage the private sector to leverage ICT innovations in addressing competitiveness, (v) empower ICT industry to scale up investment and innovations to create global success stories by taking home market as the stepping stone, (vi) attain redesign capability out of digital technologies so that material and energy need as well as wastage decrease and yield increases in whatever Bangladesh produces, (vii) leverage digital economy for harnessing

the potential of the fourth industrial revolution and attaining SDGs, and (viii) cope up as well as take the advantage from the unfolding fourth industrial revolution. Here are some specific strategic areas for making interventions during the 8th FYP:

1. Leveraging Line Ministry Centric Digital Economy Opportunities
2. Establishing Cooperation between Industry, Academia, and Government
3. Intellectual Asset and Local Market Centric Startup Success Creation and Youth Empowerment
4. Leveraging of Redesign Capability for Creating Success in High-tech Devices and Innovation
5. Turning high-tech Parks into Nucleus of Digital, Knowledge, and Innovation Economy
6. 4IR Productive Knowledge Acquisition and Conversion into Economic Outputs
7. ICT for Greater Transparency, Good Governance, and Service Delivery
8. Ensuring Equitable and Fair Share of Bangladesh in Global Digital Value Chain
9. Leveraging Digital Economy for Attaining Sustainable Development Goals
10. Digital Economy for Leveraging Fourth Industrial Revolution
11. Intensifying Effectiveness and Efficiency and Encouraging Private Investment
12. Developing the Culture and National Innovation System for Leveraging Knowledge-Economy

These strategic areas have been explained further along with suggested policies, program activities, and indicators in the following sub-sections.

5.1 Leveraging Line Ministry Centric Digital Economy Opportunities

In achieving their respective mission, every line ministry should strategically leverage digital innovations. The focus should be on taking advantage of emerging digital innovations supporting local R&D, innovations, startups, and industry. For example, the ministry of transportation should look into the opportunity of connectivity, onboard and roadside sensors, and AI for monitoring driving behaviors and road conditions for reducing accidents and enhancing throughputs. Basically, every line ministry has an unfolding opportunity in the digital space. Moreover, leveraging digital innovations for achieving mission objectives also supports attaining some of the critical SDGs relevant to energy, emission, and environment, as shown in Appendix J.

Five-Helix: In taking advantage of line ministry-specific unfolding digital opportunities, the focus should be on the five-helix approach: collaboration between (i) government, (ii) education and research organizations, (iii) industry, (iv) startups & entrepreneurs, and (v) investors. Along with the attainment of mission objectives, it will promote the digital transformation of the local ecosystem. But be mindful of the challenges implied by "multiple helix" approaches to policymaking. The organization and governance of such multi-stakeholder processes are complex. They often challenge the possibility of ensuring that decisions follow an agreed roadmap, respect defined roles and responsibilities, and are binding.

Table 14: Line Ministry Centric Digital Economy Strategy Outline

Policies and Program Activities	Indicators	Remarks
To keep monitoring global progress and envisioning line ministry specific unfolding digital possibilities	The number of technologies and innovations tracked and a number of possibilities identified. Local value addition through R&D and innovation. Collaboration between the Government, Industry, and Academia.	Vendor-driven procurement of imported ready-to-use approach should be supplemented with envisioning the future possibilities and supporting local R&D for increasing local value addition, strengthening academia, and fostering innovation, startups, and industry.
Develop line ministry-specific digital programs for addressing key mission objectives.		
Establish synergy line ministry specific digital programs and establish nation-wide programs		
Identify R&D issues for exploiting digital opportunities and support industry-academia collaboration to carry out them		
Take a series of demonstration projects, in partnership with industry and academia, for increasing the scope of local value addition and reducing risks in implementation		
Redesigning engineering programs to meet the technological requirements of the Government and supporting the local digital innovation industry		

It should be noted that the adaptation and diffusion of advanced digital technologies imply trial-and-error processes. The scope should be created for gathering experiences from success and failure for meaningfully contributing to the exploitation of unfolding digital technology opportunities. Informed choices about the desirable future of attaining line ministry-specific mission objectives out of digital possibilities require academic R&D, firms, and governments to build on their strengths, recognize capability gaps and take risks to experiment and learn about what works and in which context.

5.2 Establishing Cooperation Between Industry, Academia, and Government

Establishing linkages between Industry, Academia, and Government forming triple-helix is a vital issue for leveraging digital and knowledge economy. It appears that the majority of the academic community in Bangladesh is under the impression that basic research done by academia will lead to industrial innovation. The government's role is perceived to be as a fund provider for pursuing basic research. On the other hand, Industry expects academia to deliver human resources who can readily start engaging in productive activities. As Bangladesh has been pursuing technology import-driven economic development, the industry has a very negligible learning and innovation program.

On the other hand, the linear model of innovation for distilling industrial products from basic research of academia appears to be highly risky as well as a lengthy process of establishing meaningful linkage between industry and academia. It seems that academia should be involved in undertaking R&D for predicting, adapting, and innovating next-generation digital innovations, often by redesigning existing products and processes, for both the Government and the industry. Appendix B provides further clarification.

Table 15: Program activities for linking industry, academia, and government

Policies and Program Activities	Indicators	Remarks
Encourage industry to pursue redesign of products they are producing now by adding digital technology-based features to products as well as processes	Number of redesign products and processes by leveraging digital possibilities, and MVA, as well as service value, add increased due to it. New products with digital content are being introduced. Patents and publications are being produced. Royalty on patents is being earned by academic intuitions. MVA from the exploitations of patents.	Adequate research is needed to gather insights and focus on appropriate targets. Publications and intellectual property issues to be managed well for ensuring meaningful collaboration
Encourage industry to start producing those products where MVA could be increased by leveraging digital technologies		
Encourage industry to pursue innovative solutions around digital technologies for marginalized groups		
For leveraging digital possibilities, encourage industry to adopt flexible and decentralized production; supply chain connectivity, delivery, performance, and logistics; agile, adaptive organization		
Encourage the industry to pursue circular economy through recycling efficient use of resources; remanufacturing, refurbishment, and reuse of products and components; product as service, sharing models, and shifting in consumption patterns		
Provide incentives in detecting R&D issues for implementing the above policies and engage academia to pursue them.		

In meaningful triple-helix, the challenge is to make sure that academia is assigned the role in producing publishable as well as patentable knowledge, and the industry can utilize the produced knowledge into profitable revenue. In the absence of this focus, there is a risk that the use of public funds may not create a model of private sector-driven R&D capacity.

5.3 Intellectual Asset and Local Market Centric Startup Success Creation and Youth Empowerment

Despite the promise of creating an endless opportunity for growth out of startups, as high as 90 percent mortality rate of startups is a big concern. Further explanation is provided in Appendix D. Irrespective of the greatness of ideas and strength of the underlying technology core, every startup starts the journey of taking an innovative idea to market at a loss. To turn this loss into profit, continued R&D is needed to make the innovation better as well as cheaper. But, unfortunately, startups in the digital space are pursuing predatory pricing to grab market share. There has been a growing concern of unsubstantiated valuation and the requirement of massive funds for creating unsustainable startup success stories in the digital space. The success strategy should be to focus on continued R&D, the creation of a portfolio of intellectual assets and properties, and improving quality and lowering the cost for creating digital innovation success stories.

Table 16: Program activities for increasing startup success stories

Policies and Program Activities	Indicators	Remarks
Provide incentive in undertaking R&D for producing patents and expanding intellectual asset base	Patents being filed and received by startups and integrated into products and processes.	Focus on IA/AP in creating startup success stories will address multiple issues, including the industry-academia gap
Discourage predatory pricing based startup race in the digital innovation space	Measures being taken to limit predatory pricing to monopolize digital startup space.	
Foster academic R&D in supporting the generation of intellectual asset-based startup formation and growth	IA/AP portfolio of startups spinning out from academic and R&D facilities.	
Create awareness and provide support to startups for managing intellectual asset (IA) portfolios and leveraging it to the valuation and fundraising.	Role of IA and patents in startup valuation and fundraising.	

It's being observed that the digital startups scene has been drawing the interest of youths. The formation of ideas around smartphone apps and mobile connectivity has been prevalent among the youths. But invariably, these ideas do not start the journey in producing profitable revenue, inevitably creating the demand for the fund. These youths should be empowered with IA/IP asset base to turn those ideas into a profitable venture. Otherwise, there is a risk that upon losing money and time in pursuing those ideas through subsidy, they might end up in high-level failure and frustration.

Valuation with the possibility of monopolization through predatory pricing has been a new formula for growing the population of unicorns in the digital space. Unlike the past, often, these unicorns burn billions before graduating from infancy, with the capability of running operations with their own income. This thesis has been at the core for SoftBank and others for pumping billions into the startup space. Recently, the merit of this thesis has been questioned, mainly due to WeWork issue.

5.4 Leveraging of Redesign Capability for Creating Success in High-tech Devices and Innovation

Labor content in the manufacturing of high-tech products has been rapidly falling, weakening the labor-based manufacturing value addition (MVA) strategy. On the other hand, the advancement of digital technologies is offering the option of redesigning existing high-tech products for offering higher quality at a lower cost. This opportunity should be exploited for increasing MVA through ideas of redesign. Moreover, such redesign should focus on process redesign as well. Such redesign capability acquisition will also increase the supply of high-tech productive knowledge. This strategy will also start expanding the high-tech patent portfolio and opening the opportunity of linking universities with industrial R&D to support the innovation need of the industry.

Bangladesh must start building a patent portfolio for increasing MVA in high-tech. It is being observed that ten global frontrunner economies account for 90 percent of patents and 70 percent exports. Only ten economies together account for 91 percent of all international patent families in advanced digital technologies.

Table 17: Program activities for acquiring and leveraging redesign capability

Policies and Program Activities	Indicators	Remarks
Link tax and other incentives to MVA through ideas of redesign	MVA growth through redesign	Adequate background research should be done to set achievable as well as the attractive value of relevant indicators.
Support R&D for the redesign of products by leveraging digital technologies	Patents	
Support R&D for adapting and advancing digital technologies to support product redesign	Patents and publications	
Support infrastructure and provide incentives to start manufacturing those high-tech products which are amenable to redesign for increasing MVA through ideas.	A number of newly introduced high-tech products.	
Support R&D for innovating new products by leveraging the capacity to redesign existing high-tech products	Number of innovations introduced in the market	

Made in China 2025: It's time to draw a lesson from China's renovation strategy. Instead of inventing new technology and innovating new products around it, China has instead opted to imitate and consequentially re-innovate existing successful products. Over the last 15 years, China has increased R&D finance from around $30 billion to close to $400 billion, making it the 2nd largest R&D spender. China's such R&D spending has ballooned publication records and patent filling to support its re-innovation strategy. This strategy has already powered Chinese mobile handset making companies to take over the Indian market.

Japan's Nobel Prize has a Root to Renovation strategy: Over the last 19 years, Japan has received 20 Nobel Prizes, primarily in physics and Chemistry. This remarkable success appears to have roots in producing knowledge to support the redesign of existing products, starting from LED bulbs to Lithium-ion batterie-.

5.5 Turning High-tech Parks into Nucleus of Digital, Knowledge, and Innovation Economy

The government of Bangladesh has been working on developing specialized industrial parks to support the growth of the high-tech economy. So far, 28 public high-tech and software technology parks and 12 private software technology parks (STPs) are at different phases of development. Firms have already started operations in some of these parks. Moreover, the Government has also been developing a high-tech incubator at CUET. Notably, in high-tech manufacturing, the journey has begun through labor-based value addition, primarily for assembling imported components. But this value addition is extremely low, often less than 10 percent of the cost of the finished product. Due to high tax differential reaching as high as 57%, producers are succeeding in selling these locally assembled high-tech products as a solid substitute to imported ones. But such low-value addition is neither rewarding for the country nor sufficient enough for the producers to export. It's being learned that due to such low-value addition, even after enjoying a 10% cash incentive, producers are failing to make these locally assembled high-tech products competitive in the export market. To increase the value addition, moving to component manufacturing often does not offer an attractive value proposition. Due to scale, scope, and IP effects, usually, it's cheaper to import most of the high-tech components than to manufacture them locally. To address this issue, the strategy should be linking high-tech parks with universities, research establishments, intermediate goods and service providers, and startup initiatives making high-tech parks the nucleus of the innovation economy

of Bangladesh. For example, semiconductor design service providers can offer services to high-tech product firms to redesign their products for adding value through ideas, in addition to labor. This concept is further clarified in Appendix E. To make progress along this line, recommended policies are mentioned in Table 18.

Table 18: Program activities for turning high-tech parks into the nucleus of innovation

Policies and Program Activities	Indicators
Provide incentives to the ecosystem to provide knowledge inputs to high-tech manufacture firms	Value add through collaboration
Encourage high-tech product assemblers to redesign their products through sourcing of ideas and design services locally	Number of products being redesigned and patents filed
Support startups to innovate high-tech products and locate into high-tech parks	Number of startups move to high-tech parks
Offer R&D supports to universities to undertake redesign assignments from high-tech firms	R&D projects, patents, publications
Support collaborative projects between firms operating in high-tech parks, and university-based incubators	Number of collaborations
Support the collaboration between firms operating in high-tech parks, ICT industry, universities, and line ministries so that local industry can succeed in innovating and manufacturing needed innovations to support the mission need of respective line ministries	Number of line ministries involved and their implications on innovation, local production, and procurement

5.6 4IR Productive Knowledge Acquisition and Conversion into Economic Outputs

At present, Bangladesh makes simple products and adds meager value. For example, Bangladesh's more than 80 percent export income is from ready-made garments. The means of value addition are through spinning, weaving, knitting, finishing, cutting fabrics, stitching, finishing, and packaging according to designs supplied by the buyer by operating imported machinery. To keep increasing per capita income, reaching a high-income state by 2041, Bangladesh needs to progress to make complex products. Despite the high volume, per person value addition is not sufficient to scale up and increase the per capita income of Bangladeshis. But, in order to do so, the supply of increasingly higher value productive knowledge should be supplied. As explained in Appendix F, with a position of 103 among 128 countries in the Economic Complexity Index, this would be a daunting challenge for Bangladesh. On the other hand, there has been a high gap between industry and academia.

Like other developing countries, Bangladesh faces the challenge of developing a productive knowledge base, primarily in the technology stack underpinning the fourth industrial revolution (4IR) while leveraging an innovation economy. While innovating and making complex products may be a far-fetched dream, Bangladesh needs to keep acquiring superior product knowledge so that the country's youths can participate in the emerging global labor market. In the era of 4IR, skill demands will progressively center around the development of artificially intelligent (AI) components.

It is widely acknowledged that increased investment in conventional educational activities will not lead to the acquisition of higher-level productive knowledge. Instead, learning by working in processes tied to developing complex products appears to be the best option for acquiring the essential skills. Such reality often poses a chicken & egg problem, and finding an entry point to break the impasse is critical. Among other options, this is why

the immense potential of acquiring productive AI knowledge by harnessing possibilities like remote sensing offered by unmanned aerial vehicles (UAVs) or software-intensive innovations for augmenting labor in farming and healthcare can be considered.

Table 19: Program activities for creating productive knowledge

Policies and Program Activities	Outcomes
Establish labs focusing on 4IR technologies and collaborative platforms, especially public-private partnerships (PPP), to create awareness and understanding, foster the adoption of new technologies, support adaptation and further advancement, developing intellectual assets, and facilitate the transfer of knowledge.	1. Real-life awareness of 4IR possibilities in different sectors 2. R&D supports will facilitate startups in taking their ideas to market 3. The supply of 4IR productive knowledge will increase 4. IT firms will make good use of the facility to undertake 4IR R&D
To create the demand and supply capacities of 4IR innovations, the focus should be on developing sector-specific 4IR Use Cases and documenting global best practices, and promoting as well as supporting their development, adoption, and diffusion.	Clarity of business benefits out of 4IR use cases and global best practices will lead to strengthening both supply and demand of the local 4IR innovation market.
Establish labs focusing on 4IR technologies and collaborative platforms, especially public-private partnerships (PPP), to create awareness and understanding, foster the adoption of new technologies, support adaptation and further advancement, developing intellectual assets, and facilitate the transfer of knowledge.	1. Real-life awareness of 4IR possibilities in different sectors 2. R&D supports will facilitate startups in taking their ideas to market 3. The supply of 4IR productive knowledge will increase 4. IT firms will make good use of the facility to undertake 4IR R&D

5.7 ICT for Greater Transparency, Good Governance, and Service Delivery

Bangladesh has already made progress in ICT usages in public service delivery. This progress should be accelerated by capitalizing on new technology opportunities, including data analytics. In the following areas, further progress needs to be made:

- Lack of capacity and skilled resources: this has been observed repeatedly as the single most significant barrier. Skill gaps exist at multiple levels in agencies and among citizens, including:
  - Essential ICT and smartphone literacy of citizens, particularly at the senior level
  - Digital service design and implementation
  - Business process transformation
  - Management of data centers and ICT systems in a secured manner
  - Integration, interoperability, and information exchange between internal and external systems
  - Strategic ICT management and foresight.
- Lack of mass impact for citizens: few digital services have yet achieved high take-up levels and typically run alongside the existing paper-based systems (adding cost and complexity to service delivery while benefiting only a few users of the services).

- ICT duplication: most of the information systems across government agencies are running on disparate datacentres, ICT architectures, and software development platforms, with duplicated requirements and investments.
- Lack of interoperability: systems have largely been developed in isolation from each other, so they are challenging to integrate. Awareness of the National Enterprise Architecture and the E-Government Interoperability Framework is low, and people who are aware of them are unsure about the practical implementations for their Ministries.
- Insufficient capacity with existing shared services: where BCC already offers shared ICT services (e.g., hosting in the national data centre, computer emergency incident response), these services are welcomed, but we cannot meet it in full.
- Cybersecurity: following the recently experienced cybersecurity challenges at Bangladesh Bank, agencies increasingly appreciate the critical need to improve the security of their digital government systems to protect the public administration from continual and evolving cyber threats, but lack skills, processes, and resources to do so.

5.8 Ensuring Equitable and Fair Share of Bangladesh in Global Digital Value Chain

Given the regulatory weaknesses of Bangladesh and lack of international collaboration in dealing with antitrust and data privacy issues, the progression of digitization has been leading to the gradual taking over of local businesses by global ones. Moreover, breach of data privacy is making citizens vulnerable to manipulation, discrimination, and harassment, consequently leading to increasing inequality among countries and fellow human beings.

For example, Bangladesh's total advertisement market size is worth US$150 million. It's being reported that companies in Bangladesh are spending nearly US$ 100 million every year for digital marketing on the platforms of Facebook and Google to reach their target audience. The rapid proliferation of smartphones, frequent visits of potential customers to websites containing targeted content, and increasing sophistication of algorithms have made online advertising far more effective than conventional platforms like TVs or billboards. Unlike in the past, the online advertising market is virtually monopolized by two global players: Google and Facebook. Such monopolization raises essential questions. How did they succeed? With high market shares, are these companies abusing market power, throttling competition, and unfairly treating users? How are different countries responding to concerns pertaining to market power, antitrust, and other competition issues? These issues have been further expanded in Appendix H.

On the other hand, Bangladesh's recent progress in ICT and digital Bangladesh is primarily driven by public expenditure, reaching above BDT15,000 crore. The recent advancement of smartphone assembling does not bring much change either, as local value addition is less than 10%. As labor-based value addition in digital devices ad software innovations is as low as 10%, firms and countries having a strong portfolio of patented ideas are dominating value addition in the international trade of digital products. According to a recent study of UNIDO, "Ten frontrunner economies account for 91 percent of patents, 70 percent of exports and 46 percent of imports of new technologies." With virtually no patent portfolio in digital technologies, Bangladesh's digital agenda is primarily import-driven. Bangladesh must take steps to reverse this situation. Suggested program activities are shown in Table 20.

Table 20: Program activities for increasing fair share of Bangladesh

Policy and Program activities	Outcome
To protect citizens in the digital space, update data protection regulation along the line of EU's General Data Protection Regulation.	Measures are taken to safeguard the data of citizens, corporates, and the Government. Legal steps are being taken against violations.
Address regulatory weaknesses and strengthen international collaboration in dealing with antitrust and data privacy issues.	Global players are prevented from anticompetitive behavior, and local firms are given scope to grow in the digital space.
Invest in R&D in developing a patent portfolio in the digital technology space.	Bangladeshi firms start upgrading their value addition capacity by leveraging patents ideas.

5.9 Leveraging Digital Economy for Attaining Sustainable Development Goals

Existing products and processes to produce them are not sufficiently scalable to meet growing consumption with depleting resources while maintaining the planet's livability. On the other hand, existing institutional capacities are not also appropriately scalable to monitor the evolving situation and assessing the progress pertaining to each of the targets of SDGs. It's well accepted that technology has a pivotal role to play to make progress in attaining SDGs. Technology, mainly digital technology stack driving 4IR comprising of more than a dozen frontier technologies, starting from AI to robotics, has the potential to improve both effectiveness and efficiency of resource utilization, service delivery, monitoring progress, and establishing cooperative partnerships. It's evident that the possibility of digital technologies on each goal and also target will vary. The table shown in Appendix J shows qualitative observation on likely relative potential (low, medium, and high) of advanced digital technology stack on attaining each of the 169 targets pertaining to 17 SGDs. Among them, 126 are targets for achieving SDGs, and 43 are means of action, but each of them is amenable to get support from the digital technology stack. Some of the example digital opportunities in Table 21; and Table 22 shows suggested program activities.

Table 21: Example digital innovations for attaining SDGs

Related targets	Digital Innovation Potentials
2.4 Ensure sustainable food production system 12.3 Halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	Reduce food wastage through (i) optimal harvesting, (ii) precision processing, storage, packaging, and transportation, (iii) tracking the supply chain, (iv) optimal retailing. Supply and demand optimization at the retail level through improved prediction
2.3 Double the food productivity 2.4 Ensure sustainable food production system	2.1 UAV based soil fertility and crop health mapping, and precisely distributing inputs like fertilizer, pesticide, and water; Wastage of farming inputs could be reduced, and the yield of farming outputs could be improved.

Table 22: Suggested program activities for leveraging digital technologies for SDGs

Polices and Program Activities	Outcome
For each target of SDGs, support is needed to conduct a technology-specific investigation, as per template as shown in Appendix K, to locate realizable potential and designing an intervention to turn it into results towards attaining SDGs.	Precise understanding leading to appropriate action, covering the whole value chain starting from idea generation to innovation, leading to diffusion.
Develop line ministry-centric responsibility map and programs for leveraging digital technologies in meeting SDGs.	Well-coordinated, synergistic interventions
Engage industry through associations, and provide R&D supports to link universities and R&D facilities to industry focus innovations	Products and processes are being redesigned to minimize material and energy needs and reduce waste

5.10 Digital Economy for Leveraging Fourth Industrial Revolution

In a recent report (A2i, 2019), it has been predicted that in five major sectors of Bangladesh, 5.5 million people will likely lose jobs by 2041. Such prediction is in parallel with the global scenario of job loss, as predicted by Frey, C. B., and Osborne, M. (2013). On the other hand, there are also counter-arguments. There has also been a strong belief that, like in the past, technology-led productivity growth will lead to both economic and labor demand growth. But there is no denying that technology creates a job polarization effect.

Along with creating new tasks, technology invariably delegates tasks from humans to machines, creating a non-uniform effect on individuals, firms, industries, and countries, which is commonly known as job polarization. In this globally connected economy, such reality of technology implications demands a clear understanding of likely implications on labor demand and skill transformation and required responses from education and training institutions to address them. Moreover, as the scale, scope, and speed of the effect of technology in the age of 4IR will be far more profound than the other three revolutions, the importance of predicting and taking countervailing measures is far more critical than ever before. Relevant observations and recommendations are provided in Table 23.

Table 23: Leveraging digital possibilities for coping up and leveraging 4IR

SL	Observations	Strategic Recommendations
1	Technology progression will lead to (i) automation of tasks, (ii) creation of new tasks and (iii) redefinition of remaining tasks. As a result, *task content production* will keep experiencing transformation. Such dynamics creating polarizing effect has a non-uniform effect on types of tasks as well as gender.	In target industries, task-level analysis of occupations should be performed, and projection should be made about the task content transformation based on likely implications of each of the technologies underpinning 4IR.
2	Skill requirements in performing tasks will keep changing due to the transformation of task content production. For example, once digital printing is introduced, task content in production in the printing department of the RMG value chain changes.	Training need for upskilling should be assessed based on the likely transformation of task content production. Moreover, particular emphasis should be given to up-skilling female workers, as they are worse sufferers to automation.
3	Sharpening of innate capabilities (including soft skills) will increase the performance of labor in executing low-level manual tasks. As a result, technology developers will find it harder to automate those tasks, leading to the longer shelf life of low-skilled labor.	At the school level, measures should be taken to enhance the innate capabilities and soft skills of students. Moreover, the existing labor force should also be given the training to strengthen inherent capabilities, along with soft skills.

4	In both goods and services, new features will be added for leveraging technologies driving 4IR. As a result, new tasks will be required to perform in producing those additional features. For example, AR/VR-based features could be introduced to expand tour guidance features in the hospitality and tourism industry.	Both existing and new labor forces should be given training in performing those tasks in producing 4IR technology-based features. Some of these likely features are embedded electronics in RMG products, VR/AR-based guidance to tourists, or serving customized food to guests using modern cooking tools and methods.
5	Depend on the progression of technologies underpinning the 4IR transformation of task content production will take place, demanding training need for upskilling.	Technology assessment and forecasting should be considered to predict task content production transformation for assessing the up-skilling training need.
6	Skill demand depends not only on the degree of automation but also on the products, which firms, industries, and the country as whole produce. In adding to automating existing tasks, the 4IR technology stack is also opening the opportunity of introducing additional tasks, such as remote service delivery.	Measures should be taken to introduce the production of additional products for the purpose of both export and import substitution, particularly by leveraging 4IR (e.g., remote supervision of IoTs and service delivery in collaboration with Robots) so that the volume of task supply increases.
7	It's estimated that almost 2 million job seekers are entering the labor market of Bangladesh. Among them, as high as 50 percent of them are leaving the country.	In determining skill development needs, the transformation of job content production should also take into consideration of nature of jobs in which Bangladeshi expatriates will be likely engaging.
8	IR4.0 technology stack supports innovation in both product and process levels, creating new tasks. For example, UAV-based fertility and crop health mapping and discharging of inputs in a precise manner.	Innovation prediction should be made, and facilitation should be provided, consequentially increasing the task supply. Skill development training should be provided for performing those newly introduced tasks.
9	Most of the studies, including the one conducted by a2i in partnership with ILO, appear to be at the occupation level, giving emphasis on job loss. Such studies do not focus on the likely transformation of task content production due to the progression of 4IR. As a result, such studies do not provide adequate clarity on training need assessment for skill development.	Exiting studies should be complemented with follow-up detailed tasks level investigation spelling out the automation of tasks, change of interface of remaining tasks, the introduction of new tasks for adopting automation, and also the introduction of new tasks due to addition of product features.
10	Due to the rapid progression of the IR4.0 technology stack, task content production will keep changing, consequentially demanding constant upgrading of skill level.	A life-long learning attitude and skills should be developed in both the existing labor force and future job seekers. Developing the skill of learning from online resources is an example of building life-long learning skills.

The fourth industrial revolution has been a vital issue. The continued progression of the underlying technologies has been unfolding the 4IR. In order to cope with the threat and leverage opportunities, underlying technologies need to be monitored, implications should be assessed, HR development needs to be determined, innovation opportunities need to be identified, and appropriate interventions must be taken. To facilitate this process, a template is provided in Appendix L.

5.11 Intensifying Effectiveness and Efficiency, and Encouraging Private Investment

During the tenure of the 7th FYP, public investment has been dominating the investment scenario in the ICT sector and Digital Bangladesh program. It's worth noting that over a span of four years, public expenditure in the ICT sector jumped from around BDT4,000

crores to over BDT 15,000 cores. It appears that private investment has not kept pace with this growth of the public investment. Some of the observations in intensifying private investments in different segments of the ICT sector are as follows:

i. International connectivity, Domestic Transmission, Access network, and Internet service: There has been significant progress in international connectivity. Competition between private operators and state-owned submarine cable operators has reduced the wholesale price of international bandwidth. But such wholesale price fall is not reflected in proportionate price reduction of internet bandwidth at the users end. One of the factors is the domestic transmission network. There has been very weak or no competition in this segment. The Government's aggressive investment to strengthen this segment by linking all unions is not being complemented by private investment. Instead, NTTN operators have become contractors to Government's projects. As a result, supply-driven competition strategy has not been in action. On the other hand, due to a virtual monopoly in the access network, there has been no aggressive investment for upgrading technology and increasing efficiency. Despite the progress in mobile-centric Internet connectivity and public investment, the cost and quality of Internet connection is still a significant concern. To address it, measures should be taken to intensify competition of private investment as opposed to pumping more public funds.

ii. Cloud Infrastructure: Foreign providers are dominating Bangladesh's cloud service market. These providers neither have an establishment in Bangladesh nor offer legally defendable acceptable SLA to individuals and firms of Bangladesh. Measures should be taken to address data privacy and SLA pertaining to global cloud service. To complement Government's investment in Tier 4 data centers, there has not been proportionate private investment in developing local cloud platforms. Policy measures should be taken during the 8th FYP to stimulate private investment in setting up cloud platforms.

iii. Software: Despite the expansion of computer science and engineering education, and public-funded training programs, there has been very limited private investment to expand the software segment of the ICT industry. To exploit the software segment further, strategic focus should be on blending science with software to innovate solutions in addressing yield, quality, and wastage in critical areas of the society, as explained further in Appendix G.

iv. High-tech manufacturing: It's being reported that as high as 60% of the smartphone being sold in Bangladesh are now locally assembled (Islam, Z., 2019.a). Basically, meager tax on components and high taxation on finished products (as high as 57%) has created a high tax differential in favor of local assembling. The labor-based local value addition in this progress is very low. As a result, both job creation and private investment are extremely low. The conventional strategy of manufacturing components to progress along the value chain does not address this either. The focus should be on R&D for adding value through ideas of the redesign. The 8th FYP should take measures to make progress along this line. Tax and other benefits could be linked to the improvement of acquiring patents and using them in redesigning products as well as processes for increasing the quality and reducing the cost. The focus should be on value addition and high-paying job creation instead of the volume of assembling outputs.

v. e-Commerce: Despite the recent growth of this segment, there has been ample scope of increasing the effectiveness and efficiency for encouraging private investment. During

the 8th FYP, the development of interoperable smart logistics and warehouses could be supported to grow to scale up e-commerce, particularly in the rural areas. Literacy for smartphone-based service consumption and transaction and digital payment should also be addressed. Incentives could be given for digital payment as opposed to making cash payments.

vii. Business process outsourcing: Despite the high wage differential in favor of Bangladesh, export revenue in the BPO yet to show significant growth. The growth of mobile phones and Internet penetration has opened the opportunity of offering various services, including customer care over mobile phones. Policy and regulatory measures could be taken to encourage outsourcing customer care and back-office services to develop local expertise and capacity for scaling up the export revenue.

viii. Freelancing: Despite the participation of a large number of youths, as high as 500,000, the revenue from the segment is insignificant. It is learned that only a tiny fraction of these freelancers are generating attractive revenue from the marketplace. As most of the freelancers are failing to earn adequate revenue, there has been a declining trend in the active freelancing population in Bangladesh. To increase per-person revenue, the focus should be on delivering high-value professional services. For exploiting this potential, market-oriented skill development should get priority. Cross-border payment appears to be a significant obstacle to their growth. Research finds that top-performing freelancers could be assisted to scale up their successes in creating firms. Some of the interventions could be in setting up accelerators and providing management support for product development.

ix. Startups and venture capital financing: Bangladesh's success of attracting less than $100 million venture capital finance is insignificant to India's record of raising over $14 billion. A large number of international VCs poured such a vast risk capital into India's startups. The strategy of attracting increasing foreign VC funds in Bangladesh's startups should include packaging startups led innovation opportunities and promoting them, supporting R&D and encouraging startups to develop intellectual property strategy, and easing the operation of VCs in Bangladesh. It's worth noting that international VC financing for exploiting digital innovation opportunities through startups could be a vital financing strategy for meeting SDGs and leveraging 4IR out of local innovation opportunities.

5.12 Developing the Culture and National Innovation System for Leveraging Knowledge-Economy

The leveraging of digital opportunities and creating a knowledge economy is quite different than Bangladesh's track record of import substitution and RMG export. The culture of learning and pursuing the journey of perfection is quite different than labor-based manufacturing value add. It appears that Bangladesh needs to make significant progress in nurturing conducive culture to leverage the knowledge economy in the digital age. Lessons from other countries, particularly of Japan, have been explained in Appendix I.

The culture of pursuing a relentless journey of chasing endless perfection out of scientific discoveries and technological inventions appears to be at the core of profiting from innovative ideas. Such cultural values grow among individuals through meticulous nurturing in families, schools, workplaces, and society as a whole. And the state plays a vital role in patronizing this precious capability underpinning the innovation economy. In addition to making progress in conventional indicators, it's time to have a serious focus

on nurturing the culture of pursuing a persistent journey of endless perfection for offering better quality products at a lower cost to succeed in profiting from ideas.

To scale up the success of digital demonstration for wide-scale adoption, companies and also government often run into an unexpected obstacle: culture clash. Research finds that by ignoring culture, organizations 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 a continual change of flux is quite paramount.

National innovation system: In 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 system" should be given strategic focus. In developing the national innovation system driving the economic growth of Bangladesh should draw a lesson from other countries such as Korea, India, and Taiwan. The summary of the lesson from Korea is shown in Table XXIV.

Table 24: Lesson from Korea in building national innovation system

Country	Relevance	Lesson for building National innovation System for Leveraging Knowledge-Economy
Korea	High	Process innovation leading to incremental improvement of products appears to be a role model for Bangladesh. Korea's strategy of demonstrating the benefit of R&D in driving industrial competitiveness through Government-funded research institutions played a crucial role in encouraging the 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 the Government's research institution. Such a strategy appears to be very suitable for Bangladesh in developing the national innovation system. As a result, although Korea's R&D spending has reached over 4.3% of GDP by 2015, the industry shares almost 90% of this R&D investment. Moreover, the linking of the university is addressing the human resource issue.

6. Overall Observations, Risk Factors, and Recommendations

Digital Bangladesh agenda for improving public service delivery, connecting industry to global digital space, and creating new industries ultimately depends on technological upgrading; but import-driven technology upgrading runs the risk of hurting Bangladesh's competitiveness. As a countervailing measure, Bangladesh should participate in the global value chain of technology development and innovation for adding value out of knowledge and ideas.

First came the steam engines, which was followed by electricity and computing-driven industrial revolutions. Recent technological breakthroughs in the broad area of digital technologies seem to be pushing yet another wave, which is commonly called the fourth industrial revolution (4IR). In the age of 4IR, Bangladesh's technology import-driven, labor-based value addition strategy is under serious threat. Along with skill uplifting, Bangladesh must focus on knowledge economy building by leveraging the 4IR technology stack.

Digital Bangladesh, ICT, and Knowledge economy form the core competence to address inclusive, sustainable industrial development for making Bangladesh an advanced economy

by 2041. The 8th FYP should focus on developing and leveraging this competence for creating jobs and income opportunities, forming new industries, addressing environmental issues, minimizing energy and material use, improving industrial competitiveness, enhancing capital utilization, and establishing effective linkages between actors of the knowledge economy.

Despite the recent progress, Bangladesh suffers from a severe deficiency of capacity for leveraging the opportunity of Digital Bangladesh, ICT, and knowledge economy out of innovations. The 8th FYP should address both market, system, and directional failures. Due to the presence of such failures, Bangladesh's relevant agenda is primarily technology import driven. It's time to focus on jobs creation, local value addition, and economy-wide value-added effect instead of public expenditure centric revenue of the ICT industry.

Advanced digital technologies allow for fully integrated, connected, and intelligent production processes, where information flows across operations and generates real-time feedback to support decision-making (such as the use of smart sensors and machine-to-machine communication, cobots, big data analytics, cloud computing, artificial intelligence, and 3D printing). To graduate from the analog stage to this smart production stage, Bangladesh should focus on acquiring knowledge and adopting a craftsmanship culture of pursuing endless perfection through technology absorption and adaptation, scientific discoveries, and technology invention instead of continuing technology import driven leapfrogging strategy.

Increasing digitization is posing a threat to data privacy, taking over local markets by global ones, unfair competition, non-productive usages of technologies like smartphones and social networking, social isolation of youths and addictive attachment with technology, and a new form of the digital divide. The 8th FYP should pay serious focus to these critical issues.

At the cusp of the fourth industrial revolution and the mission of attaining SDGs, Bangladesh has started the journey of graduating from low middle-income country status to be a high middle-income country by 2030 and an advanced country by 2041. Graduation from factor-driven to knowledge and idea economy by leveraging advanced digital technologies appears to be a critical requirement for Bangladesh to cope up as well as leverage 4IR and SDGs while progressing towards economic milestones. Existing mindsets and institutional capacity need significant uplifting to make expected success in this mission of migration from idea importer to idea producer, consumer and exporter.

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Appendix A

Idea Economy: Generating and translating ideas into economic value

M Rokonuzzaman, Published by The Financial Express, September 09, 2019

Nobel Laureate Paul Romer has popularized the idea that economic outputs are a function of ideas and objects. Objects comprise of raw material, labour, energy, land etc. Ideas form the recipe of mixing ingredients. By improving ideas or adding more objects, we could expand economic value creation. As developing countries are running short of objects in driving their economic growth further, it's time for them to focus on ideas. Moreover, improved recipe through the addition of ideas also reduces environmental degradation and facilitates growth. Due to such a reality, development planners often make a call to developing countries to upgrade from factor-driven economy to innovation economy to keep progressing with economic growth. Failure of doing so runs the risk of being caught into the growth trap. The challenge is how to generate ideas and convert them into economic outputs-generating increasing revenue and profit.

Industrial economies are success stories of generating and translating ideas into economic value. Knowledge is gathered to generate ideas of deriving increasing economic outputs from given inputs. Often those ideas emerge as product and/or process features to get the job done better as less cost, preferable, causing less harm to the environment. How to generate those ideas is often a mind-boggling question. Ideas of light bulb or smartphones often give us the impression that only a genius can come up with great ideas. Idea generation is often conceived as a sudden spark in the creative mind of a genius. Does it mean that it's a random outcome? Is it just the act of genius? If only genius like Steve Jobs or Edison can show this magical outcome, should we wait for the emergence of those of mythical characters to create an idea economy?

Investment in basic research leads to the discovery of scientific knowledge. Ideas are often formed from this newly discovered science. But only a small fraction of scientific knowledge is converted into ideas for getting jobs done better. Those ideas are the underpinnings of global economic growth. The journey of startups in turning such ideas into profitable business has created many remarkable success stories. But the upfront investment in scientific research in producing high-value ideas is very high. Moreover, such journeys are long, and also the outcomes are uncertain. Often the return on investment from this journey is also very low. For example, upon spending $5.7 billion on research and development (R&D), Canadian universities generated less than $75 million from licensing their innovations (687 patents) in 2017. That's an average return on investment (RoI) of 1.3 per cent. Although this RoI is far higher in the USA, it will likely be negligible or virtually zero in most of the developing countries, including Bangladesh. There is a need for strong industrial capacity to transfer those ideas into economic output. Due to the weakness of local industry, despite being a G7 economy, patents produced by Canada's rich education and research capacity, and high-tech SME's are increasingly being sold to foreign firms. Share of IP invented and owned by Canadians transferred to foreign entities more than

doubled from 18 per cent to 45 per cent during the 1998-2017 period.

Success stories of major industrial economies like Japan are basically due to the commercialisation of ideas. The success of Japan's industrial economy does not appear to be the act of genius like Edison or high investment in basic research either. Often it is argued that Japan succeeded in borrowing or copying ideas from the USA and Europe. But how do Japanese firms succeed in selling those ideas in those markets? Why don't intellectual property rights laws create a barrier to Japanese innovation? Moreover, why are American innovation icons like Apple are buying idea-intensive components to roll out their magical ideas? Although we have been taught to believe "don't reinvent the wheel", success of idea economy is largely in the journey of reinventing the wheel for offering better wheel at less cost. Fortunately, this journey of reinvention is not about showing magic. Moreover, magical outcomes are also basically the culmination of repeated reinventing acts. Successful companies have created more or less a deterministic process in generating ideas and turning them into economic output, improving their market share, revenue, and also profit to revenue ratio. To them, it's not about waiting for sudden sparks. Rather, it's about following a methodical process of analysis, knowledge accumulation, idea generation, cost-benefit analysis, screening ideas, and integration of potential ideas into product and process features.

It is not only in Japan or Korea that the underpinning of the success of industrial economy is the capability of redesigning existing products. Major industrial products like cars, washing machines, microwave oven, software applications, TVs, or door locks are going through a series of redesigns. These redesigned products are better, as well as cheaper. Producers succeed in selling redesigned products at a lower price to more customers for making greater profit. Redesign skill of making products better as well as less costly to produce is the key to create idea economy, consequently creating endless growth path. So far, skill development focuses on making. Such skills primarily focus on producing the same product following the same process, using a given set of machinery. As a result, we do not succeed in turning ideas into economic output. Fortunately, redesigning skills could be nurtured among those who are not necessarily genius by birth.

Some of the major redesign options are: (i) replace mechanical parts with electromechanical or electronics components, (ii) reduce the number of parts through pursuing integration, (iii) replace the role of hardware with software, (iv) delegate more roles from human to machine for both using the products and processes of making them, and (v) develop a part which could be used in multiple products, for leveraging scale. Analysis of existing products and figuring out the scope of exercising these redesign options lead to generation of ideas in making those products better, as well as cheaper. The progression of technologies, even in other industries, often creates such redesign opportunities. For example, microprocessors, sensors, and software technologies were not developed by the automobile industry. But automobile companies are seriously leveraging such technologies in redesigning their products. For example, like many other products, automobiles have been going through

redesigns. One of the major redesign strategies is to replace the roles of human and physical components with software. According to a report by an international consultancy, software value addition in automobiles will keep growing at a rate of 7.0 per cent per year until 2030, far higher than 3.0 per cent overall growth of the sector. Similarly, electric vehicle is a redesign example by exercising the option of delegating role from mechanical engines to electrical battery and motors. This trend will likely see the value of software in this sector nearly double from $238bn to $469bn.

By adding just raw materials and labor in producing products through imported design and machinery, developing countries can no longer keep growing. Neither minimum wage fixing for income growth, nor subsidy for the expansion of export offers the sustainable path of economic growth. Similarly, digitization through import of technologies, and professional services through growing public expenditure do not also create an idea economy. It's time to focus on redesigning products, which are being produced now, and also to redesign processes to produce them so that profitability of firms keeps increasing with the success of offering higher quality products at lower cost. In the absence of attaining the capability of redesigning skills in creating the market of ideas, in making products better as well as cheaper, developing countries like Bangladesh will likely face a daunting challenge to keep growing.

Appendix B

Reducing academia-industry gap: Three approaches

M. Rokonuzzaman, Published by the Financial Express, November 05, 2019

Academia-industry gap has been a growing issue, particularly in developing countries like Bangladesh. Industry and academia have a mutually reinforcing relationship. Industry looks to academia for qualified candidates to add to its workforce. On the other hand, success of academia primarily depends on the employability of graduates. To address the quality issue, academic institutions like Universities have been upgrading their curricula following globally reputed institutions and teaching methodology. Universities are acquiring high calibre faculty members. But the reality remains that potential employers have been complaining about the lack of competence of many of the graduates. It's an irony that some of those graduates, upon migrating to advanced countries, are succeeding in pursuing higher education and also building careers. Such reality raises an important question about this vital academia-industry gap. How to address it?

Higher educational institutions like universities have the mandate to develop graduates who can globally compete, both in academic pursuits and the job market. On the other hand, the local job market demands graduates to meet their purposes. It seems that there is a mismatch. The gap between the two exists due to differences in their approaches, missions, and goals.

To bridge the gap, companies and academic institutions are required to collaborate more closely for mutual benefits. Government entities also have important roles to play. Such collaboration often needs to be primed by public fund, but should be scaled up and sustained by funding of the industry. Policies and regulations have a strong role in encouraging such mutually beneficial partnerships.

There may be three primary ways of addressing this gap. The first one is about developing the curricula and adopting teaching methodology recommended by the industry to produce ready-to-use graduates by the employers. Such an approach often turns academic institutions into corporate training centres. Through such an approach, short-term necessity could be fulfilled, often at the cost of the long-term purpose of higher education. Mainly, in developing countries, the industry has been engaged in making products by importing capital machinery, product ideas as well as design, and also management practices. Such industrial strategy often leaves no room for science and engineering graduates to use their theory-centric academic capability to conceptualise a situation, and pursue solutions through adaptation of best practices and also innovation. Often weak management capacity of existing firms fails to nurture such ability and allocate resources for the purpose. As a result, tailoring higher education to meet the current needs of the industry often runs the risk of failing to meet the broader purpose.

The second one is the academic institution-led approach to develop industry-ready human resources. Universities undertake R&D (research & development) activities and they succeed in building products and new firms around them, creating jobs for graduates having experience in working in those R&D and venture incubation activities. It appears to be a linear model (perfected by Americans and also Europeans) and easy to comprehend for academic institutions. Such a model seems to be at the core of the very low industry and academia gap in the United States. Major universities in the USA pursue this model in

creating new industries and populating them with the spin-off of their research laboratories. For example, California's Silicon Valley used to be an orange orchard. In contrary to firms of the Silicon Valley asking neighbouring universities like Stanford University to produce human resources for them, spin-offs of R&D activities of those universities have turned farmland into high-tech clusters. Creating such success following the linear model of innovation in developing countries appears to be extremely difficult.

The third one is led by industry through collaborative R&D. Instead of just replicating products based on imported ideas and technology, industry undertakes the journey of pursuing relentless perfection of redesigning products in making them better as well as cheaper, by absorbing, adapting and advancing science, technology and innovation. In doing so, they form partnership with universities, turning them into virtual industry R&D laboratories. Companies use academic labs as incubators of ideas for redesigning their products as well as processes to produce them. As a result, faculty members and students keep getting exposed to addressing industries' competitiveness issues through education, research, development, and innovation.

This third approach appears to be more pragmatic than the others. Certainly, the other two options have the potential to complement the third one. Such an approach also reduces pressure on the government in addressing issues of industrial competitiveness through diverse incentives. The question could be: how to trigger and institutionalize this collaboration?

To begin with, the government should reform industry and education policies. Such reform should focus on local industrial value addition through ideas of product and process innovations, in addition to labor and raw materials. Such a change in industrial policy should be complemented with the shift in focus on higher education policy.

Industry-academia collaboration is a burning issue for developing countries to fuel the growth of the economy through the development of human capital. The potential of labor and raw material in fueling the growth and creating jobs has been running out of steam. On the other hand, the growing unemployment of university graduates is a serious issue.

Appendix C

Intellectual properties (IP) strategy for startup success

M Rokonuzzaman, Published in The Financial Express, October 07, 2019

Despite the promise of creating an endless opportunity of growth, as high as 90 per cent mortality rate of startups is a big concern. In creating a blue ocean opportunity, startups are in the mission of taking ideas to market. As opposed to trying to outperform their rivals to grab a greater share of existing demand in a matured industry, they are in a mission of creating new demand--rather than fighting in a jam-packed market space. In contrary to competing in a crowded market space of matured industry, where products and growth are negligible, startups are in a journey in creating an ample opportunity for growth that is both profitable and rapid. Unfortunately, irrespective of the greatness of the idea and strength of the underlying technology core (often emerging one), innovative products of startups invariably enter the market in a primitive form. Such primitive products create very little willingness to pay among a very small group of customers, resulting in loss-making revenue generation. How to turn this loss into profit and create new customers and market is a core challenge for startup success.

Subsidy is required to support the loss-making operation. But it's not a sustainable solution. Rather the underlying technology core should be amenable to rapid improvement supporting the delivery of subsequent releases of better-quality versions of the product at lower cost through the endless journey of incremental innovation-gradually turning the loss-making revenue to profit, preferably without increasing the price. The success of a startup depends on selecting suitable technology core and undertaking R&D in creating intellectual assets and integrating them into products and process so that blue ocean emerges out of ideas. For example, to succeed in food delivery, innovation should be more than taking orders with apps and monitoring the progress by looking at smartphones. In the recent past, dozens of e-commerce inventions in food delivery got patents around the world. It is no surprise that the US and China have produced the majority of these patents. The patents range from refrigeration methods for food home deliveries to web-based apps that allow users to order food online and track their purchases. Chinese inventors have also patented robotic food delivery machines, fitting with the trend in automation innovation. Particularly, for food delivery, patented ideas focus on (i) refrigeration methods that enable perishable foods to stay fresh during delivery, (ii) heating apparatuses that enable restaurant food to retain its ideal temperature, and (iii) ordering methods that facilitate the consumers' ability to order exactly what they want. Despite the high activity of food delivery startups virtually in every major city across the world, patent filing activity highly varies, though. For example, as opposed to the filling of more than 700 food delivery patents in the USA, only a few were filed in India. Such variation in intellectual property front will show significant contrast in startup successes among countries.

Within the context of Schumpeter's theory of creative destruction or Christenson's concept of destructive innovation, startups are in a mission of offering substitution to existing products. To succeed, these substitutions should be of higher quality. And they should also cost less. Ideas around emerging technology core are the underpinning in addressing these conflicting variables simultaneously. Once there is progress in addressing them, competition shows up offering imitation, turning a newly created tiny blue ocean into crowded market space. Such reality demands that startups pursue legal protection around their ideas into intellectual properties. Such intellectual properties (IPs) are vital in making

their innovations a stronger substitute to existing products on one hand. On the other hand, IPs play vital role in creating some degree of barrier in the competition space, whether through speed and/or legal measures, or as a combination of both.

Basically, startups face two major challenges in creating success. The first one is about making the innovation around new technology core a better as well as cheaper substitute, creating a blue ocean. Secondly, they also need to create competition barrier so that followers do not invade into the newly created opportunity easily by imitating. To address these two vital issues, IP strategy is a core building block. It should not be an afterthought. Rather, from the very beginning, they should make IP strategy as an integral part of the winning plan. Their IP strategy should focus on developing a course of action that utilizes the intellectual property to enable a startup to sustainably offer increasingly higher value at decreasing cost, for expanding the boundary of newly created market and increasing market share, and maintaining the position in the competition space.

In the past, developing countries attempted to overlook IP issues, as it was perceived as a barrier to transfer technology from advanced countries. But in the absence of some degree of legal supports to creating excludable space of idea development and appropriation for profit, startups will highly likely fail to reach profit, let alone sustaining profit. But in creating such profit-making space, competition should not be throttled. In the absence of competition, ideas will not fully grow in creating a large big ocean. Many of the developing countries also have very negligible R&D capacity. They are in the process of increasing R&D investment to graduate from low middle-income status. In addition to financing, their capability of turning outputs of R&D into economic growth is also a major issue. It appears that developing R&D capacity for facilitating the IP strategy for startups could be a good beginning in leveraging R&D investment for driving growth.

The focus on integrating IP strategy for startups with the R&D investment optimization will likely offer a high yield in monetizing IP assets. In the absence of such integration, the conventional model of increasing R&D funds for academic institutions and R&D establishments may lead to negligible or no economic output. For example, economic output in terms of business innovation or startup success of $150 million fund provided to higher education institutions in Bangladesh appears to be minuscule. Moreover, startup investment itself is getting significantly high, even in developing countries. For example, as reported by The Economic Times of India on April 2018, “Of the total $18 billion invested in startups, $14 billion were in the last year,” by 20,000 startups claimed by union commerce and industry minister.

For turning technology ideas into economic output, startups appear to be a suitable point for developing countries to enter into the innovation economy. For startups to succeed in creating a Blue Ocean of growth opportunity, they need to have a strong IP portfolio. But in the absence of local R&D capacity, it appears to be an insurmountable barrier for them to overcome. On the other hand, R&D fund given to universities and research institutions is failing to create economic outputs out of ideas. The integration of startups’ IP strategy with the agenda of developing R&D capacity for fueling economic growth will likely have a strong synergy to create the ecosystem of the idea economy. For creating Blue Ocean opportunity, it’s high time to link startup agenda to R&D activities, so that highly optimized, market-driven pathway is created for generating ideas and turning them into economic outputs.

Appendix D

High-tech: Acquiring Redesign Capability

M Rokonuzzaman | Published by the Financial Exppress: September 27, 2019

From Africa to South Asia, there have been great initiatives to get a piece of the high-tech economy. To witness the roaring of their tigers or lions, high-tech parks or economic zones are being developed, fiscal incentives in the form of tax differential offered, next-generation mobile data networks rolled out, subsidies given, and youths are inspired to pursue the mission of startups or building robots. Yes, some visible signs of progress are reported. India is happy to report that 95 per cent of mobile phones sold in India carry Made in India label. Bangladesh also reports progress in succeeding with meeting 40 per cent local demand of mobile phone through local assembling. Following the footsteps of Asian countries, the Ethiopian government is developing a "portfolio" of industrial parks as the centrepiece of its plan to make the country an African high-tech manufacturing hub. Inspired by the high tech mission, often school students impress us upon building humanoid, demonstrating the ability to listen and respond. But are these successes good enough to roar the economy?

To create the success of local high-tech production in meeting 95 per cent local demand, India imported over $13 billion components, mostly from China. In this high-tech adventure, India's value addition is barely 17 per cent, mostly through labour. One of the key factors underpinning India's success is the duty differential between imported and India-made handsets, which used to be 11.5 per cent in 2017, making local manufacturing cheaper. Unfortunately, in creating this success, India's local brands have lost their market share to Chinese makers. Xiaomi captured the top spot in Q2 2019 with a 28 per cent share. Its shipments grew 6 per cent YoY (year on year) driven by product portfolio expansion. Among the top five, four are Chinese makers, and South Korea's Samsung is the other one. Chinese makers are offering handsets, which are more appealing to Indian customers than handsets being offered by local brands like Micromax. Over the last decade, not only Huawei, but all major Chinese brands like Xiaomi, Oppo or Vivo focused on ideas (patents) of the redesign of handsets, making them more appealing, and less costly to produce. As a result, Chinese makers are succeeding in making a profit out of ideas of the redesign, while local Indian brands are losing market share by replicating commodity designs.

India's strategy of expanding value creation out of component manufacturing also falls short. Most of the expensive smartphone components like camera sensors, display modules, processors, antenna, software, and lenses have high intellectual property (IP) components. Production of these high precision components is capital intensive, leaving very little room for labour. Due to high IP and capital intensity, scale and scope advantages are a critical barrier to benefit from local production to compete in the cost front. Often production for local consumption increases the cost. For such a reason, Apple virtually does not make any physical component. It sources components from more than 200 global suppliers, including rival Samsung. Therefore, in the absence of ideas for redesign, labour-based value addition in assembling and component manufacturing falls short of stimulating the economy.

The argument could be that market will be expanded through export. But labour-based little value addition falls short in making the product cost-competitive in the global space. For example, upon succeeding in capturing the local market of TV and refrigerators by exploiting the advantage of tax differential, Bangladesh is now contemplating on high-tech export success. It's being reported that local brands are exporting such products in different

parts of the world, including Africa and the Middle East. But what is the underlying strength? It appears to be the cash incentive. On one hand, import tax on components and capital machinery is zero. On the other hand, cash incentive on export is 10 per cent or above. As opposed to local value addition, such fiscal incentives are major drivers of high-tech export success.

It appears that labour-based value addition in replicating high-tech products has been continuously shrinking. Capital intensity and economics of scale and scope advantages are also limiting the scope of leveraging the available scope of labour based value addition. It's time to focus on redesign capability acquisition. It has been observed that upon acquiring the capacity of how to make, sustained industrial success stories focused on acquiring the redesign capability, often by taking advantage of emerging technology. For example, Japanese automobile makers learned how to make automobile from Europeans as well as Americans. But they did not create success out of how to make. Their success is deeply rooted in acquiring the capability of how to redesign automobiles. On the other hand, Indians, upon learning how to make an automobile from the British firms, could not master the skill of how to redesign -- making products increasingly better as well as cheaper.

The emergence of new technologies, changes in customer preferences, and positive externality effects open the opportunity of getting ideas of redesign. For example, automobiles used to be mechanical machines. But major makers like Toyota or Honda have been leveraging the advantage of information technology in redesigning automobiles. One of the major redesign strategies is to replace the roles of human and physical components with software. According to a McKinsey report, software value addition will keep growing at a rate of 7.0 per cent per year until 2030, far higher than 3 per cent overall growth of the sector. This will see the value of software in this sector nearly double from $238bn to $469bn. Due to failing in acquiring this redesign capability, India's automobile makers are consistently losing competitive edge.

It's being noticed that there has been a race to leverage artificial intelligence (AI) as a strategic technology to redesign products, and also processes. Wipo (world intellectual property organisation) showed that the number of AI-related patent applications worldwide rose from 18,995 in 2013 to 55,660 in 2017 - 300 per cent growth in just four years. Although startups dominate AI technology talk, industrial companies of the past century are dominating the patent portfolio. It may not surprise us to see IBM, Microsoft or Alphabet among top 10 AI patent recipients. But what about Japan's Toshiba, NEC, Fujitsu, Panasonic, Canon, Sony, Toyota, NTT and Mitsubishi? Five of them are among the top ten. It seems that major players of the industrial economy are generating AI-centric ideas for redesigning their products, in delegating human roles to machines. Despite startup craze, incumbent companies in making their existing products better performing, safer, smarter and also cheaper will likely be beneficiaries of AI.

High-tech products not only have new technology core, they are also causing disruption to previous generations. The high-tech industry has also been disrupting labour-based value addition comparative advantage of developing countries. On the other hand, high-tech technology portfolio is also opening the opportunity of getting ideas to redesign existing products as well as processes in improving the quality and reducing the cost. It's imperative to upgrade the strategy from labour-based value addition, whether in assembling or component manufacturing, to high-tech idea-based redesign. Otherwise, the high dream of developing countries fuelled by subsidy and low-cost labour for replicating high-tech products will likely fail to roar the economy.

Appendix E

High-tech park: Nucleus of Innovation Ecosystem

M. Rokonuzzaman , Published by Financial Express: 31 May 2017, 21:05:47

Innovation is one of the major drivers for economic growth. It is about developing ideas for offering new products, or improving upon the processes in producing them. These ideas are usually based around emerging technologies. Ideas are developed when there is a combination of technological possibility and economic viability. Many actors with special capabilities are required to contribute, starting from idea generation to commercial exploitation. As a result, a single actor is not sufficient enough to complete the journey. Rather, a group of actors having complementary attributes need to contribute. The coexistence of these actors in close proximity is often termed as innovation ecosystem. In an innovation ecosystem, diverse actors work in their own interest to turn ideas into profitable flow of revenue. Some of those ecosystems have grown as a closely knit fabric in certain parts of the world. The economic contribution of such ecosystems appears to be a miracle, turning farmland to innovation hotbed increasing per capita income. Policy makers are after replication of such economic success stories. One of the popular policy interventions for innovation ecosystem is to develop high-tech parks. But isolated development of such high-tech parks, particularly in developing economies, turn out to be property-based initiatives with no innovation dimension. In absence of surrounding innovation ecosystem, such high-tech parks usually result in 'high tech fantasies', isolated entrepots of low technology production that contribute little to fulfil their stated goals.

Like many other countries, Bangladesh has taken an initiative to develop high-tech parks. One of the notable sites is located at the outskirt of Dhaka; and another one is being constructed at the city centre of Jessore. To fulfil the goal of earning $5.0bn annually and creating 1m jobs by 2021, it is being reported that there is a plan to set up 12 IT parks in the country-one in each major district. At the beginning, these parks may be targeted to attract foreign direct investment in hardware manufacturing and software development. With the given history of high-tech parks in developing countries, even in some advanced ones, such initiatives may not be more than labour centric activities around high-tech jobs. Despite such likely low-tech beginning, the possibility of building innovation ecosystems around such high-tech parks should be exploited.

It appears that there are seven major types of activities being performed in the high-tech value chain. The entry link of this value chain will vary depending on the prevailing country context. But it does not necessarily mean that upon entry, there is no scope to travel through the value chain to gradually move to higher value added segments. For example, Bangladesh's entry may be in the low-tech assembly of hardware devices or coding and testing of software in the high-tech value chain. But, in course of time, Bangladesh has the opportunity of developing ecosystem centering each high-tech park to move to higher value added segment, creating innovation economy.

Question may be raised as to the possibilities of commercial exploitation of innovative ideas in Bangladesh. With the given global competitiveness, it may be a highly uncertain journey to succeed in global innovation space. But, the growth of component technologies has opened the opportunity to innovate for improvement of the products which are being produced now, and to enhance the processes to produce them. It is quite encouraging to

note that high-tech innovation is not just limited to high-tech end user products. As a matter of fact, every production process, whether producing farm or industrial products, is subject to high-tech innovation. Even indigenous production processes like pottery or handloom could be improved by taking advantage of high-tech innovation.

But to take the advantage of high-tech innovation, a number of activities should be carefully planned and implemented. In absence of it, labour centric low-tech beginning of high-tech park will not likely graduate to high-tech innovation ecosystem. For example, although we entered the textile industry through labour centric value addition, but despite being a major producer of finished products, we have not made virtually any progress in innovation segment of the industry. Rather, revenue earned in the textile and ready-made garments industry is either reinvested in the expansion of the same labour centric segment, or being diverted in completely different industries, such as real state, or hospitality. If we had taken smart steps, we could have been successful in developing innovation centric textile and apparel making machinery industry. As a result, in addition to low cost labour, we could have succeeded to add high value through mental capacity of our university graduates. Such success could have resulted in innovation economy, creating high paying jobs for our graduates. Similarly, although Bangladesh has become one of the largest markets of mobile handsets, reaching more than $1.0 billion import, there has been virtually no value addition. Moreover, it is quite unfortunate to observe that local firms having large revenue base in importing mobile handsets have been expanding in real-state or other disconnected industries, instead of investing in adding local value to mobile handsets.

Therefore, it is suggested that along with the construction of high-tech or IT parks, there should be well planned activities to develop innovation ecosystem around each of those parks. Each park should be targeted to grow as the nucleus of different high-tech innovations. For example, one of them could be centre of cyber security innovation. Another one could be the breeding ground of precision farming solutions. To progress along this line, important actors should be identified and they should be empowered to play their due roles. Although universities are deemed to be important actors, their roles should be appropriately defined. Instead of encouraging universities to follow linear model of innovation, they should be rather motivated to focus on research to innovate to improve existing products and processes to produce them. We should also bring changes in policies related to trade, taxes, competitiveness, and innovation financing. Instead of making Bangladesh a market of foreign technologies, import tax on capital machinery should be rationalized to create demand of local process innovation. Similarly, a portion of subsidy and economic incentives, given to address cost of production issue facing farming or manufacturing industry, should be diverted to provide incentives to source local innovation to address the same issue. We need to reform Bangladesh Council for Scientific and Industrial Research (BCSIR) turning it to industry focused contract R&D centre. We should also upgrade research and academic institutions around each of those high-tech parks to undertake research and development activities to support innovation in targeted areas. We should also create incubation and shared R&D facilities in each of those parks. Risk capital financing issues should also be taken into consideration. The R&D grants provided by the ministry of science and technology should also be targeted to support innovation ecosystem around each of those parks. Overall economic planning should take into consideration developing and taking advantage of such high-tech park centric ecosystems.

There might be a question about the weak base in turning high-tech or IT parks as innovation hubs in Bangladesh. But different studies indicate that the vast majority of the successful and innovative clusters that we see today are the result of serendipitous events, and have frequently evolved from spontaneous, chance concentrations of economic activity. Despite such serendipitous emergence, their presence could be leveraged in shaping the evolution and progress of regional innovation system. Therefore, instead of waiting for well-planned activities to unfold in proper sequence, it would be prudent to plan to develop innovation ecosystem around each of the hitech parks ? to kick-start the innovation economy. To make progress along this line, we should have a very well conceived strategy and action plan. To unlock such potential, we may need to have major reform in broader economic, science and technology policies of the country. But, such reform is necessary not only to make high-tech parks innovation success stories, but also most importantly, to increase the role of total factor productivity to economic growth-to make Bangladesh a high middle-income country by 2030.

Appendix F

Acquiring AI Productive Knowledge Base: An Example of pursuing drone-based applications

M Rokonuzzaman and Sajjad Zohir, Published by The Financial Express on April 24, 2019

Like other developing countries, Bangladesh faces the challenge of developing a productive knowledge base, primarily in the technology stack that can drive the fourth industrial revolution (4IR) while leveraging innovation economy. While innovating and making complex products may be a far-fetched dream, Bangladesh needs to keep acquiring superior productive knowledge so that the country's youths can participate in the emerging global labour market. In the era of 4IR, skill demands will progressively centre around the development of artificially intelligent (AI) components.

With a position of 103 among 128 countries in the Economic Complexity Index, this would be a daunting challenge for Bangladesh. It is widely acknowledged that increased investment in conventional educational activities will not lead to the acquisition of higher-level productive knowledge. Rather, learning by working in processes tied to developing complex products appears to be the best option for acquiring the essential skills. Such reality often poses a chicken & egg problem and finding an entry point to break the impasse is critical. This is why the immense potential of acquiring productive AI knowledge by harnessing remote sensing possibilities offered by unmanned aerial vehicles (UAVs) or drones can be considered.

Since the first industrial revolution, the gap of accumulating productive knowledge among countries has been inceasing dramatically. The differential of holding this vital capability is largely attributed to the growing variations of complexities of products being produced and traded by different countries. It also often depends on the overseas engagement of the workforces, who return to their homelands with the experience of construction and development of complex products. The level of complexity of products being produced and profitably traded in the international market is also a measure of local value addition and per capita income contribution from industrial activities. In building higher-level productive knowledge to succeed in producing increasingly more complex products, Bangladesh needs to acquire complex productive knowledge while pursuing productive activities that will ensure profitable returns. The crucial challenge is to find the opportunities to harness the possibilities in the age of 4IR.

UAVs or drones look like flying toys, which often create nuisance in some airspace. But once they are fitted with appropriate sensors such as cameras or LIDARs (Light Detection and Ranging), they can turn into remotely controlled remote sensing platforms that facilitate the generation of a large volume of information. Through smart algorithms such as signal and image processing, pattern recognition, machine vision, and data analytics, very meaningful intelligence can be gathered through UAVs. Such intelligence could lead to a better understanding of the situation, extracting meaningful measurements and

empowering machines to take artificially intelligent actions. UAV could be used in different sectors for varying purposes.

UAVs FOR PRECISION FARMING: UAVs fitted with a camera, multi-spectral imaging sensors, or normalised difference vegetation index (NDVI) cameras can deliver images with meaningful information related to precision farming. By processing those images, real-time intelligence of crop fields associated with issues such as soil fertility, irrigation problems, fertiliser needs, pesticide attack or poor performance areas can be derived. Such intelligence can help with more uniform irrigation, precise dose determination, and early detection, consequentially leading to wastage reduction of farming inputs and higher yield. Research reports on European countries and India suggest that UAV-guided precision farming could lead to 15 to 25 per cent yield enhancement by enabling balanced use of fertiliser and/or pesticides.

SURVEYING AND 3D MODELS: Over the past 50 years, surveying and engineering measurement technology has made four quantum leaps: the electronic distance meter, GPS, mobile robotics and laser scanner. UAVs or drones will be the next quantum leap in technology.

MANAGING CONSTRUCTION AND RIVER EROSION: Roads, railways and river embankments in a flood-prone country such as Bangladesh are regularly damaged, and assessing those damages for repairs & maintenance are real headaches for government departments like Local Government and Engineering Department (LGED), Bangladesh Railway (BR) and Bangladesh Water Development Board (BWDB), among others. The use of UAVs in assessing the damage and estimating the cost could play a vital role in project planning and execution. Taking this further, recent developments in photogrammetry allow the use of (relatively) cheap camera-only UAVs (drones) to create 3D representations of infrastructure assets. These can then be imported into BIM (build information model, digital twin) systems to create scalable models and visualised in augmented and virtual reality environments, consequentially contributing to better project monitoring, quality assurance and compliance.

MONITORING GAS AND POWERLINE FOR PREVENTIVE MAINTENANCE: UAVs can stream high-definition infrared and video images of power infrastructures, which could later be processed to produce photogrammetry and infrastructure health products. For instance, a thermal camera may help identify overheating parts of infrastructure, or spots that require further action. Similarly, UAVs fitted with methane monitoring sensors could provide early warning about likely leakage of gas pipelines.

ACQUISITION OF AI PRODUCTION KNOWLEDGE FOR LEVERAGING 4IR: The journey of the exploitation of these and other possibilities offered by UAV-based remote sensing will lead to the acquisition of productive knowledge in the 4IR technology stack, needed for driving AI innovations. Some of the notable ones are: i) High-end diverse sensors, ii) Signal and image processing, iii) Machine or computer vision, iv) Photogrammetry in

developing 3D and 2D models of the terrains, v) Big data and data analytics vi) Data and decision fusion, vii) Neural Network, and Deep learning, viii) Internet of Things (IoT), ix) Cloud and Edge computing, and x) Simulation, Visualization, and Digital twins.

Acquiring a productive knowledge base in the 4IR technology stack has been a major challenge for Bangladesh. Unfortunately, the academic institutions and the classroom processes imparting knowledge and skills are extremely inadequate compared to the alternative means of acquiring those through experience and real-world applied R&D centric project-based learning. It appears that UAV-based projects hold potentials to exploit diverse possibilities. Such practicality opens the opportunity of engaging researchers, faculty members, students and also an industry to explore relevant technologies, assess capabilities, and improve them further so that they can succeed in UAV-based service innovations. As a result, among the participants, this mission will lead to productive knowledge development around these technologies. The availability of such competencies will empower existing firms as well as start-ups to recombine those bits and pieces of productive knowledge to create a larger variety of smarter and better products for leveraging the AI-driven fourth industrial revolution.

Appendix G

Blending basic Science with Software for Competitive Production

M Rokonuzzaman, Published by The Financial Express on March 11, 2018

In this globally competitive economy, finding ways to offer better quality products at lower cost has been the endless challenge to improve as well as sustain competitiveness. With the eroding human labour, exploitation of science has been the next frontier for growth. Although developed through long painstaking research, most of the useful scientific knowledge circulates freely. Developing countries can easily acquire them by making an affordable investment in education. But turning acquired knowledge into wealth through production of better quality products at lower cost has been a daunting challenge.

As a result, growing numbers of science graduates end up in unrelated jobs, virtually requiring no use of knowledge of natural science. On the other hand, developing profitable large-scale software business has been an unfulfilled dream for many developing countries like Bangladesh. Although India succeeded in creating almost 3.9 million export-oriented information technology service jobs, those jobs are on the path of erosion. Moreover, existing software development activities in developing countries mostly deal with database centric business application development, encoding virtually no knowledge of natural science in software. But there is an unfolding opportunity to blend science with software to develop machine capability, often termed as machine learning or artificial intelligence, to enhance existing productive activities--to produce better quality products at lower cost. Such blending strategy opens a new opportunity for competitiveness.

Let's clarify this opportunity of fusion of science with software through a simple example. Producing clay pots is an indigenous domestic industry of Bangladesh, like many other countries. Clay, soft and plastic type substance, when heated to a high enough temperature becomes hard and glass-like. Once the pot is formed on the rotating wheel, it is left to dry. Dried pots are backed in kilns. The glaze could be added to pots to add colour, texture or functionality. Glaze, after reaching the proper temperature, usually becomes a hard, glassy surface on the clay to increase the aesthetic properties and/or the functional capabilities. The quality, productivity, wastage and cost of production could be positively influenced at different stages of production, starting from clay preparation to proper heating, adapted to different types of glaze and clay type. The quality of clay pots depends on a number of factors including uniform baking (affected by the variation of moisture content), defects caused by the presence of trapped air bubbles and the surface smoothness. The cost of production primarily depends on the wastage of energy and marketable produced outputs, as many defective pots as high as 30 per cent are discarded after an expensive baking process. By improving the production process through innovations with the support of modern technology through the fusion of underlying science with software, better clay mould could be produced with uniform moisture content and less presence of air bubbles. Moreover, the quality of clay mould as well as raw clay pots could be checked through software-based thermal imaging technique to make sure that pots with the presence of trapped air bubbles are not backed to reduce the wastage. The uniform heating could be improved by adding in-kiln thermal sensors and software-intensive microcontroller-based control system. Such a process innovation leading to smart manufacturing has the potential

to improve the quality, reduce the cost, generate higher profit and cause less harm to the environment, while creating high paying jobs for engineers for innovating better production processes-by blending science with software.

Similarly science of plant biology could be blended with software to process images of crop leafs with smartphones to precisely determine fertilizer need-opening the opportunity of wastage reduction. Numerous such examples could be cited. As a matter of fact, innovations in the form of robotics and automation are strongly relying on such opportunities. For example, automobile company like General Motor saved millions of dollars by interpreting data gathered from smart humidity sensors within the context of applicable scientific principals to determine whether automobiles can be painted. If the software by interpreting sensor data reveals that it is too humid, the car does not get painted at that time. Repainting time and expense are reduced and plant uptime is increased. As a matter of fact, smart or precision production basically leverages knowledge of the science of raw materials with software to optimise the production so that wastage gets reduced, efficiency increases and effectiveness of processing improves. Most of the developing countries are pursuing the technology of import driven strategy to benefit from such opportunity. But, such strategy fails to create high paying innovation jobs in the local economy. With the availability of low-cost sensors, computing processors and growing number of science and technology graduates, the alternative strategy could be to lead process innovation by blending science with software through local capacity improvement. Such strategy will improve the competitiveness of many local indigenous production processes as well.

Over the centuries, developing countries are facing extreme difficulties to turn knowledge of natural science into wealth. As a result, upon studying physics or biology most of the graduates end up in jobs having no relevance to those subjects. But the availability of micro sensors, processors and smartphones have opened the opportunity to turn the knowledge of natural sciences into the software to improve processes of whatever they are producing now--starting from tomatoes to fabrics.

To capitalise on this opportunity, science education should be blended with the purpose of improving local production processes by developing innovative software-intensive smart process capabilities. Instead of pursuing research for publication in competing with the West, the focus should be on partnering with local firms to innovate processes to produce better quality products at lower cost. The public policy should support both the supply and demand sides in creating the market for such software-intensive smart innovations. Incentives should be provided for targeted improvement of local production processes by fusing relevant knowledge of science with software, instead of just expanding science and technology education, and targeting export-oriented information technology service for the growth of the software industry in isolation. By improving competitiveness by even just 5 per cent per year through software and natural science-intensive process innovation, the overall economic benefit could be substantially large. It’s time for developing countries to focus on software-intensive innovations to turn science into wealth through process improvement to enhance the quality and reduce the cost of production.

Appendix H

Digital platforms in the dock: Antitrust and breach of data privacy

M. Rokonuzzaman, Published by The Financial Express on December 24, 2019

Service delivery over the internet is a growing business now. According to different market research estimates, global digital advertisement spending is likely to grow over $600 billion by 2025. And the share of the online platform of this revenue has been increasing, reaching over 30 per cent in 2018 from around 13 per cent in 2010. It is estimated that the global online advertising market was worth US$ 200 Billion in 2018.

Online advertising refers to marketing and advertising technique that employs the internet hosted websites to promote services and products. Advertisement spending in developing countries is also significant. For example, Bangladesh's total advertisement market size is worth US$150 million. It's being reported that companies in Bangladesh are spending nearly US$ 100 million every year for digital marketing on the platforms of Facebook and Google to reach their target audience. The rapid proliferation of smartphones, frequent visits of potential customers to websites containing targeted contents, and increasing sophistication of algorithms have made online advertising far more effective than conventional platforms like TVs or billboards.

Unlike in the past, the online advertising market is virtually monopolised by two global players: Google and Facebook. Such monopolisation raises important questions. How did they succeed? With high market shares, are these companies abusing market power throttling competition and unfairly treating users? How are different countries responding to concerns pertaining to market power, antitrust, and other competition issues?

The online advertising market has a natural tendency of monopoly. Due to scale, scope, and network externality effects, both Google and Facebook have monopolised their respective market spaces. For example, as high as 90 per cent of search traffic is destined to Google. On the other hand, for social networking, Facebook is unparalleled.

Once invisible hands of the market fail to govern competition, regulators rely on one of the great principles of competition law: with great power comes great responsibility. It's being argued that with a market share of around 90 per cent in online search business, Google has a responsibility to offer fair access to Google ads. But, unfortunately, it seems that digital monopolies like Google or Facebook are failing to meet the expectation of fairness. The advertising revenues that fuel profits for Google and Facebook are increasingly coming under antitrust scrutiny, often prompted by complaints from media companies as advertising spend shifts to the web. Regulators of France, Germany, Holland, and the United Kingdom (UK) have been investigating antitrust issues pertaining to Google's ad business. At the European Union (EU) level, competition commission has been very active in investigating anticompetitive behaviour of Google, thwarting advertising rivals, and slapping fine.

As of March 2019, the EU slapped a total $9.3 billion fine to Google. Among the antitrust issues, the EU has fined Google for abusing its dominant position by forcing customers of its AdSense business to sign contracts stating they would not accept advertising from rival search engines. It's being argued, "The misconduct lasted over ten years and denied other companies the possibility to compete on the merits and to innovate." EU also fined Google a record €4.3 billion last year for abusing its market dominance in mobile, and €2.4 billion the year before that for manipulating shopping search results.

In addition to the EU competition commission, individual member countries have also started investigating antitrust issues and slapping fine to Google. For example, a four-year-long investigation of France's competition watchdog has led to fining Google $167 million for opaque and unpredictable advertising rules. Among developing countries, India's antitrust watchdog took the lead imposing "$21.17 million fine on Google for "search bias" and abuse of its dominant position.

On the other hand, the Federal Trade Commission of the USA has fined Facebook a record $5.0 billion for violating consumers' privacy, which is almost 20 times greater than the largest privacy or data security penalty ever imposed worldwide. It's being speculated that Facebook will likely face millions in fines in the EU. Among others, Ireland's Data Protection Commission has brought 11 cases against the social media giant based on the GDPR General Data Protection Regulation. To protect citizens in the digital space, the EU has updated data protection regulations. According to this new regulation, Internet users have the right to know how their data is collected and used, and they also have the right to know how long the data will be retained. It's already widely known that Facebook was accused of supplying the personal data of over 87 million people for illegal data mining to the analytics firm Cambridge Analytica.

Antitrust and data protection issues are not only limited to these two giants. As we keep expanding our services over the Internet, such issues are expected to get worse. Like Europeans and Americans, citizens of developing countries are equally vulnerable to dominant market position and data piracy issues. For example, Google and Facebook have been increasingly taking away ad revenue from every country. Micro and small e-commerce platforms in developing countries are running over Facebook pages, exposing data related to customer preferences and purchases behaviors.

Although competition and privacy watchdogs of the EU and the USA are getting active to protect their citizens, what about the protection of citizens of developing and least developed countries? The EU had to gather data and run investigation over ten years to establish a legally defendable case of fining Google. On the one hand, watchdogs of developing countries are very weak, both professionally and financially. They often fail to monitor and investigate pertinent issues for protecting their citizens from malpractices of these global monopolies in the digital space.

The very recent Google litigation which involved antitrust systems of the USA, EU, India, Argentina, Brazil, and Taiwan has shown how competition has gone global. The fining of Facebook for data privacy indicates that it's a global issue too. How to enact worldwide antitrust and privacy legislation to sanction corporations involved in anticompetitive and privacy violation practices is an important issue. Like the EU or the USA, each country, particularly developing ones, cannot afford to have strong watchdogs to regulate global monopolies like Google and Facebook.

Given the regulatory weaknesses of developing countries and lack of international collaboration in dealing with antitrust and data privacy issues, the progression of digitisation has been leading to gradual taking over of local businesses by global ones. Moreover, breach of data privacy is making citizens vulnerable to manipulation, discrimination and harassment, consequently leading to increasing inequality among countries and fellow human beings.

Appendix I

Focusing on cultural values to succeed in innovation

M. Rokonuzzaman, published by the Financial Express, December 06, 2019

Often innovation is considered as spontaneous sparks in creative minds generating great ideas. Ideas could be for introducing new products, or improved versions of existing products. But the journey of taking such ideas to market at a profit is more than a magical outcome of creative genius. Despite the role of inspiration of creative mind, there is a saying: "Innovation is 1 per cent inspiration, 99 per cent perspiration." Why does perspiration play such an important role? Other than having competence in science, technology, creativity, and business, what else is needed to succeed in innovation? It has been found that the culture of pursuing an unrelenting journey of perfection, for offering better quality products often at a lower cost, plays a vital role in turning a great idea into a profitable value proposition.

Irrespective of the greatness of ideas and the strength of underlying technology core, every innovative idea invariably begins the journey at a loss. Over the centuries, it has been found repeatedly true. For example, Thomas Alva Edison became a creative genius by demonstrating sound recording and playback device. But upon impressing the President at the Whitehouse with his talking machine, he figured out that customers were willing to pay less than what he needed to produce phonograph-marking a loss-making journey of a remarkable invention. While working on improvements, Edison figured out a way to record sound on tinfoil-coated cylinders in 1877 giving birth to the phonograph. In modern times, Sony found neither the electronic image sensor technology nor the transistor, invented by Bell Laboratories, strong enough to produce profitable, innovative products, whether pocket radio or handheld video camera. Although these two great inventions are the underpinnings of the Information and Communication Technology (ICT) industry, they emerged in primitive forms. Other than having great ideas or inventions, what is needed to create the success stories, by propelling the journey in the midst of uncertainty, is often overlooked in promoting innovation as well as start-ups.

Israel is known as a start-up nation, creating breakthroughs in critical areas starting from secured communication to autonomous vehicle technology. It is surprising indeed that the Jewish community comprising only 14 million people are recipients of 20 per cent of the Nobel prizes awarded globally. Which core capability has been at the centre of their success? In Hebrew, there is a keyword: 'Chutzpa.' It stands for an intense desire for achievement, often known as do or die attitude.

On the other hand, the Japanese are known for succeeding with borrowed ideas. There is no denying that Japan has created great success stories out of ideas taken from others. Starting from microwave oven to digital camera, the list goes on. But did Japan succeed in innovation just by taking ideas from others? What else is there? Despite the importance, the impulse of the intense desire for achievement is not sufficient to succeed in innovation. It should be sustained over a prolonged time, making steady progress. Once 'Chutzpa' is blended with 'craftsmanship', a powerful force of pursuing a relentless journey of endless perfection for attaining the goal of commercial success is created. Such a force appears to be critical to remain on course in the midst of uncertainty over a long-drawn period of hunting perfection, often running over years and decades.

The question could be: is it also at the core of Steve Job's success in iPod, iPhone, or Macintosh computers, making Apple the most valuable company? In writing the obituary of Steve Jobs, The Economist termed Steve Jobs the magician of innovation. How did Steve attain this magical power? It appears to be Steve's pursuing the journey of perfection in creating excitement among target customers which is the source of this magical power. Starting from the graphical user interface of Macintosh computers to the multi-touch interface of the iPhone, Apple did not invent many of its winning technologies. Steve took them from the outside and created the magical outcome out of them by pursuing the journey of never-ending perfection.

Similarly, Japan's success is not on borrowing ideas or waiting for a creative spark in creating success stories. The core capability of innovation success at individual, firm, and country levels depends on the culture of pursuing an uncompromising journey of perfection. The pivotal capability appears to be generating ideas out of scientific discoveries and technological inventions in sharpening the great initial idea -- whether for the graphical user interface in easing the use of computers producing an image from electronic sensors or heating food with microwave energy.

Upon attaining economic success out of the commercialisation of raw material and labour, some developing countries are aspiring to develop an innovation economy. To make progress in innovation capability indicators like number of science and engineering graduates, scientific publications, patents, start-ups, and R&D investments as percentage of GDP, these countries have been increasing allocation of financial resources. They are also making massive investments in developing infrastructures, like high-tech parks, special economic zones, and universities. For example, Bangladesh has been working on 28 high-tech parks. Malaysia has been investing for decades in developing the multimedia corridor to emulate the Silicon Valley of California. Recently, it also announced a $1 billion Artificial Intelligence plan. To catalyse the growth of innovation economy, Saudi Arabia has been working on a $500 billion mega-city creating an exclusive economic zone. The purpose has been to make it a commercial, scientific, and technological capital attracting the world's greatest pioneers, thinkers and doers, to push the boundaries of innovation. Well, all those investments matters. But are they sufficient? What is missing? In the absence of such mega investments, how did Apple or HP grow from very humble beginnings as innovation powerhouses from the residue of World War II?

The culture of pursuing a relentless journey of chasing endless perfection out of scientific discoveries and technological inventions appears to be at the core of profiting from innovative ideas. Such cultural values grow among individuals through meticulous nurturing in families, schools, workplaces, and society as a whole. And the state plays a vital role in patronising this precious capability underpinning the innovation economy. In addition to making progress in conventional indicators, it's time to have a serious focus on nurturing the culture of pursuing a persistent journey of endless perfection for offering better quality products at lower cost to succeed in profiting from ideas.

Appendix J

High-level assessment of the scope of leveraging advanced digital technologies in attaining SDGs

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
Goal 1 End poverty in all its forms everywhere	1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than $1.25 a day		x	
	1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions		x	
	1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	x		
	1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance		x	
	1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate related extreme events and other economic, social and environmental shocks and disasters		x	
	1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions	x		
	1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions	x		
Goal 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round			x
	2.2 By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons			x
	2.3 By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment			x
	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality			x

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed			x
	2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries			x
	2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round		x	
	2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility		x	
Goal 3 Ensure healthy lives and promote well being for all at all ages	3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births			x
	3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under 5 mortality to at least as low as 25 per 1,000 live births			x
	3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water borne diseases and other communicable diseases			x
	3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being			x
	3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	x		
	3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents			x
	3.7 By 2030, ensure universal access to sexual and reproductive health care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes			
	3.8 Achieve universal health coverage, including financial risk protection, access to quality essential health care services and access to safe, effective, quality and affordable essential medicines and vaccines for all		x	
	3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination			x
	3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate			

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	3.b Support the research and development of vaccines and medicines for the communicable and non communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade Related Aspects of Intellectual Property Rights regarding flexibilities to protect public health, and, in particular, provide access to medicines for all			x
	3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States			x
	3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks			x
Goal 4 Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes			x
	4.2 By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education		x	
	4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university			x
	4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship			x
	4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations			x
	4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy		x	
	4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development			x
	4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all			x
	4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, sma ll island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries			

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States		x	
Goal 5	5.1 End all forms of discrimination against all women and girls everywhere	x		
	5.2 Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation	x		
	5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation	x		
	5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	x		
	5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life	x		
	5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences	x		
	5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws	x		
	5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women			x
	5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels	x		
Goal 6 Ensure availability and sustainable management of water and sanitation for all	6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all			x
	6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations		x	
	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally			x
	6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity			x
	6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate		x	

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	6.6 By 2020, protect and restore water related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes		x	
	6.a By 2030, expand international cooperation and capacity-building support to developing countries in water and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies			x
	6.b Support and strengthen the participation of local communities in improving water and sanitation management	x		
Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all	7.1 By 2030, ensure universal access to affordable, reliable and modern energy services			x
	7.2 By 2030, increase substantially the share of renewable energy in the global energy mix			x
	7.3 By 2030, double the global rate of improvement in energy efficiency			x
	7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil fuel technology, and promote investment in energy infrastructure and clean energy technology		x	
	7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island developing States and landlocked developing countries, in accordance with their respective programmes of support			x
Goal 8 Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries			x
	8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high value added and labour intensive sectors			x
	8.3 Promote development oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro, small and medium sized enterprises, including through access to financial services			x
	8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10 Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead			x
	8.5 By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value			x
	8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training		x	

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms		x	
	8.8 Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment		x	
	8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products		x	
	8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all			x
	8.a Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade related Technical Assistance to Least Developed Countries		x	
	8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization		x	
Goal 9 Build resilient infrastruc-ture, promote inclusive and sustainable industria-lization and foster innovation	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well being, with a focus on affordable and equitable access for all			x
	9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries			x
	9.3 Increase the access of small scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets			x
	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities			x
	9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending			x
	9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States			x
	9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities			x

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020			x
Goal 10 Reduce inequality within and among countries	10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average			x
	10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status			x
	10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard		x	
	10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality		x	
	10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations			x
	10.6 Ensure enhanced representation and voice for developing countries in decision making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions			x
	10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well managed migration policies	x		
	10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements		x	
	10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programs		x	
	10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent		x	
Goal 11 Make cities and human settlements inclusive, safe, resilient and sustainable	11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums		x	

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	11.2 By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons			x
	11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries		x	
	11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage	x		
	11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water related disasters, with a focus on protecting the poor and people in vulnerable situations		x	
	11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management			x
	11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities		x	
	11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning		x	
	11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels		x	
	11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials	x		
Goal 12 Ensure sustainable consumption and production patterns	12.1 Implement the 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries			x
	12.2 By 2030, achieve the sustainable management and efficient use of natural resources			x
	12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post harvest losses			x
	12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment			x
	12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse			x

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle			x
	12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities			x
	12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature			x
	12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production			x
	12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products		x	
	12.c Rationalize inefficient fossil fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities			x
Goal 13 Take urgent action to combat climate change and its impacts*	13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries			x
	13.2 Integrate climate change measures into national policies, strategies and planning			x
	13.3 Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning			x
	13.a Implement the commitment undertaken by developed country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible			x
	13.b Promote mechanisms for raising capacity for effective climate change related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities			x
Goal 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development	14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land based activities, including marine debris and nutrient pollution			x

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans		x	
	14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels			x
	14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics			x
	14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information		x	
	14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.			x
	14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism			x
	14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries			x
	14.b Provide access for small scale artisanal fishers to marine resources and markets		x	
	14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of "The future we want"			x

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
Goal 15 Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements		x	
	15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally		x	
	15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation neutral world		x	
	15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development		x	
	15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species		x	
	15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	x		
	15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products	x		
	15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	x		
	15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	x		
	15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	x		
	15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation	x		
	15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities	x		

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
Goal 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	16.1 Significantly reduce all forms of violence and related death rates everywhere	x		
	16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children		x	
	16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all		x	
	16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime		x	
	16.5 Substantially reduce corruption and bribery in all their forms		x	
	16.6 Develop effective, accountable and transparent institutions at all levels		x	
	16.7 Ensure responsive, inclusive, participatory and representative decision making at all levels		x	
	16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance	x		
	16.9 By 2030, provide legal identity for all, including birth registration		x	
	16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements		x	
	16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime		x	
	16.b Promote and enforce non-discriminatory laws and policies for sustainable development		x	
Goal 17 Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Develop-ment	**Finance**			
	17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection		x	
	17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries	x		
	17.3 Mobilize additional financial resources for developing countries from multiple sources	x		
	17.4 Assist developing countries in attaining long term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress	x		
	17.5 Adopt and implement investment promotion regimes for least developed countries	x		
	Technology			

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism			x
	17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed			x
	17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology			x
	Capacity-Building			
	17.9 Enhance international support for implementing effective and targeted capacity building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation			x
	Trade			
	17.10 Promote a universal, rules based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda		x	
	17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020		x	
	17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access		x	
	Systemic issues: Policy and institutional coherence			
	17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence	x		
	17.14 Enhance policy coherence for sustainable development	x		
	17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development	x		
	Multi stakeholder partnerships			
	17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries			x
	17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships		x	

SDG Goals	Goal Specific Targets	Attainment potential by leveraging 4IR		
		Low	Medium	High
	Data, monitoring and accountability			
	17.18 By 2020, enhance capacity building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts		x	
	17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity building in developing countries		x	

Appendix K

Template for Detecting Digital Opportunities and Designing Interventions for Making Contributions to the Attainment of SDGs

<table>
<tr><td>Logo</td><td colspan="6">SDG Goal #:</td></tr>
<tr><td></td><td>Related targets</td><td colspan="5"></td></tr>
<tr><td>Innovation potentials and likely benefits</td><td colspan="6"></td></tr>
<tr><td>Relation to Digital technologies</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">Development status</td><td colspan="2">R&D and Idea</td><td colspan="2">Start-ups & Demonstration</td><td colspan="2">Commercial products</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td rowspan="2">Geography</td><td>Feasibility</td><td>Affordability</td><td colspan="2">Financing for Innovation and Diffusion</td><td colspan="2">Infrastructure & Usability</td></tr>
<tr><td></td><td></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td>Stakeholders' Recommended Roles</td><td colspan="2">Education and R&D</td><td>Training Institutions</td><td colspan="2">Start-ups & Industry</td><td>Policy and Regulation</td></tr>
<tr><td>Qualitative evaluation</td><td colspan="6"></td></tr>
</table>

Appendix L

Template for Monitoring Underlying Technologies and Designing Interventions for Leveraging 4IR

Unfolding Robotic Scenario, related to different economic sectors of Bangladesh	Technology prospects and global offerings	Adoption in Bangladesh	Adoption in regional countries	Adoption in China	Adoption in advanced countries
Unfolding threat and opportunities (gathered from stakeholders)	Competitiveness (Cost, Quality, Productivity)	Jobs: Loss and Creation	Education, Skill, R&D and Innovation	Opportunities for IT industry	Youth empowerment and start-ups
Bangladesh's readiness, strength and weakness (gathered stakeholders)	User Firm and Industry level	Skilled manpower for using Robotics solution	Skilled manpower for process redesign and robot programming	Education, training and R&D capacity	Innovation capacity of IT firms and start-ups
Bangladesh's Strategy	Leveraging competitiveness (improving Cost, and Quality, Productivity)	Coping up with job loss and creating jobs	Developing manpower for using robots	Developing manpower for process redesign and robot programming	Conducting R&D, pursuing innovation, empowering youths, promoting start-ups
Action items for implementing strategy					
Responsibilities for Implementation					

Study 4

Governance and Public Institutions

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1. Introduction

Bangladesh made remarkable progress in economic and social development since the restoration of democracy in 1991. The pace of the country's economic and social transformation increased in the past decade, helping it to achieve the MDGs ahead of time. Its development successes reflected in key economic and social indicators are now cited as examples for other low income countries by international development partners and other stakeholders. On the back of its development accomplishments, Bangladesh achieved low middle income country status in 2015, triggering a process of graduation out of the low income category. It needs to maintain its place in the middle income country (MIC) category till 2021 to successfully complete the graduation process, and till 2019 was well on track to achieving it Meanwhile, however, it was hit by the COVID-19 pandemic in the last quarter of FY2020, sharply reducing the GDP growth rate to 5.4 per cent in FY2020 from 8.1 per cent in the previous year.[1] The negative impact of the pandemic on the economy could however be much stronger in FY2020, as growth estimates of the international financial institutions and a more recent study by Rahman, Razzaque, Rahman, and Shahadat (2020) suggest, which may delay the country's graduation but by how long remains unclear at this stage.[2]

Bangladesh's GDP growth rate exceeded 6% on average during the 6th Plan period for the first time, and rose above 7% during the 7th Plan period, with both the GDP growth rate and per capita GDP growth rate significantly surpassing those previously recorded.[3] The strong economic growth was broad-based and inclusive, resulting in deep structural transformation of the economy led by the manufacturing sector. The latter's share in GDP increased to 24% while that of agriculture declined to 14% of GDP in FY2019. Although much of the labour released from agriculture was absorbed in the manufacturing sector, the former still employs almost 40% of the labour force. Regarding human development, the attainment of almost 100% net enrolment rate in primary education, secondary school net enrolment rates comparable to most ASEAN countries, and gender parity at both the primary and secondary school levels at relatively low levels of per capita GDP are impressive achievements, although the dropout rates especially at the secondary level remain high. Key health indicators such as infant mortality rates, maternal mortality, sanitation and clean water supply also improved markedly. Bangladesh is currently ranked 106th out of 157 countries in the Human Capital Index 2018 of the World Bank, well ahead of countries with similar per capita incomes. In South Asia it is behind Sri Lanka in this index. Macroeconomic stability, a pro-private sector growth strategy and activities of non-state actors, e.g. NGOs and community organisations, and major role of the state in expanding infrastructure and public services were contributing factors in the country's overall development. Bangladesh however cannot be complacent—it faces many challenges in achieving its strategic development aspirations, arguably among the most complex of which relate to strengthening institutions and governance.

The government's 'Vision 2021' gave high priority to establishing a 'Digital Bangladesh', marking a shift towards digital governance—the computerization and usage of IT based technological solutions to upgrade the work processes of government and making them more efficient. The government's 'Vision 2021' guided the preparation of the Perspective

1 Bangladesh Economic Review 2019, MoF, 2019.

2 The IMF estimates the GDP growth rate at a much lower at 2 per cent in FY 2019-20 (IMF, 2020), the World Bank estimates it at 1.6 per cent (World Bank, 2020a) and the ADB at 4.5 percent in the same year (ADB, 2020).

3 6th Plan and 7th Plan refer to the 6th Five Year Plan and 7th Five Year Plan respectively.

Plan of Bangladesh 2010-2020, and two five year plans, i.e., the 6th Five Year Plan, FY2011-FY2015 and the 7th Five Year Plan, FY2016-FY2020. The documents led to the implementation of a wide range of measures to improve the efficiency and effectiveness of public institutions and governance, such as the preparation of the Citizen's Charter, National Integrity Strategy (NIS), legal framework for local government institutions (LGIs), etc. The 7th Plan embraced the unfinished agenda of the 6th Plan and built on it to achieve similar objectives, signalling continuity in the institutional reform process. A pluralistic democracy based on the principles of justice and equity and supported by strong, inclusive institutions is important in achieving gender equality, social protection, employment opportunity, and labour rights, including safe working conditions to empower people.

The 7th Plan placed empowerment of citizens at the centre of its development strategy as reflected in the tagline of the document: 'Accelerating Growth, Empowering Citizens.' The 'theory of change' implied by the governance paradigm of the 7th Plan may be described along the following lines: improving governance and strengthening institutions would accelerate economic growth and poverty reduction, which in turn would create assets and capabilities, thus empowering the poor, and feed back into their demand for better living standards and good governance. Education was recognized as a uniquely powerful agent for empowerment of the poor and marginalized, and enables their participation in the mainstream development process and hold institutions accountable. The 7th Plan's governance institutional reform agenda included a wide ranging reform measures, presented under three thematic areas: (i) Justice and the Rule of Law, (ii) Public Sector Capacity and (iii) Improving Economic Governance. These areas remain critical for the future reform agenda as well.

In a departure from past practice, a 'managing for development results' framework was embedded in the 6th Plan and 7th Plan, which included a results matrix with indicators and targets for the strategic objectives of the Plans. This approach permitted interim reviews of progress and achievements against targets and objectives of the Plan, and reflects a focus on the part of policy makers on tracking progress and achieving results rather than focusing only on setting targets and goals. Since the SDGs were also embedded in the objectives and measures proposed in the 7th Plan, the managing for results framework also makes it easier to track their progress along with those of the Plan.

The process of institutional reform, and changing governance structures and practices are difficult to achieve without strong and sustained political support at all levels over a long period. Political economy factors such as powerful vested interests, elite capture and patron-client relations can slow down, or even derail governance reform. Such 'governance drag' is not uncommon in the global development experience and addressing it effectively marks successful governance reform strategies In Bangladesh, too, progress of governance so far has been slow and uneven. However, allowing governance institutions to lag too far behind the pace of economic and social development can slow down or even reverse the progress made so far (Hall, 2010). Given the strong record of development achievements in the past three decades, and using theCOVID-19 crisis as an opportunity for change, the 8th Plan would provide a unique opportunity to the government to reform and restructure the country's ailing institutions. The political leadership in successful middle income countries

were able to utilize the political mandate to address resistance to reform and energize the government apparatchiks to implement reform measures effectively.

The 8th Plan will be guided by the Perspective Plan 2041.[4] It will also need to embrace the unfinished agenda of the 7th Plan to provide continuity to the reform process, and include those that are relevant to supporting Bangladesh's transition to upper MIC status in the next decade. It will also require achieving the government's objectives relating to SDG 16, i.e., Peace, Justice and Strong Institutions, elaborated as "Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels" (UN General Assembly, 2015) and to which this paper is directly related.

The present paper is based on extensive review of the literature on institutions and governance and their impact on economic growth and development; government documents, such as Vision 2021, the Perspective Plan of Bangladesh 2010-2020, the 6th and 7th Five Year Plans and their interim reviews; and other documents of the Ministry of Planning, Ministry of Finance, Cabinet Division, Ministry of Public Administration, National Board of Revenue (NBR), Anti-Corruption Commission (ACC), Bangladesh Bank, Bangladesh Securities and Exchange Commission (BSEC), etc., as well as publications of the World Bank, Asian Development Bank and IMF. The scarcity of information and data in many areas posed major challenges for the paper. However, interviews with specialists in academia, development practitioners in the public sector, private sector leaders and civil society professionals helped to mitigate the problem to some extent.

The paper comprises five sections. Section 2, contains a discussion of the interrelationship of institutions, governance and development, and analyzes Bangladesh's governance status, its performance on key governance indicators compared to some other relevant Asian countries and how governance relates to development in MICs. Section 3, discusses the progress of the reform measures taken to strengthen governance institutions over the past decade with emphasis on the last five years, as well as the issues and challenges in the important three thematic areas of governance in the 7th Plan. Section 4 looks ahead and suggests measures to maintain continuity and deepen reforms in key governance institutions during the 8th Five Year Plan.

2. Institutions, Governance and Development

2.1 The Nexus

The problems of explaining development transitions using standard economic theory paved the way for the emergence of institutional economics and its extension, i.e., new institutional economics, which emphasizes the role of institutional factors in development. In the last half century, the latter enhanced the understanding of successful development transitions, and informed institutional and governance reform in developing countries, and since the turn of the century, it entered the mainstream of development strategies. In assessing the evolution of institutional economics, Davis and North (1971), noted two distinct definitions which clarified the understanding of institutions and its implications for development. In their words, "The institutional environment is the set of fundamental political, social, and legal ground rules that establishes the basis for production, exchange and distribution. Rules governing elections, property rights, and the right of contract are examples. […]

4 Forthcoming Ministry of Planning publication.

An institutional arrangement is an arrangement between economic units that governs the ways in which these units can cooperate and/or compete. It [can] provide a structure within which its members can cooperate...or [it can] provide a mechanism that can effect a change in laws or property rights." Developing his views two decades later North (1990 & 1991) further clarifies that, "Institutions are the rules of the game in a society, […] the humanly devised constraints that shape human interaction. […] They structure incentives in human exchange, whether political, social or economic". Acemoglu and Robinson (2010) suggest that differences in prosperity across countries are explained by differences in economic institutions. Noting that economic institutions are the result of collective choices arrived made through political processes they emphasize the importance of understanding the politics that shaped economic institutions in planning effective growth strategies.

The literature on the role of institutions and governance in explaining development transitions and performance is vast and still evolving. This is discussed briefly below, before moving on to discussing the status of governance in Bangladesh in section 2.2.

A paper by Rodrik, Subramanian and Trebbi (2004), state that institutions play a more significant role in determining income outcomes relative to other factors. Specifically, they found that institutions have a larger impact on the accumulation of physical capital compared to human capital, and attribute it to constraints on the expropiability of property through institutions. In suggesting institutional reform, Khan (2006) suggests implementing measures which are 'growth enhancing' rather than pursuing more challenging 'market enhancing' governance which have not delivered good governance, arguing that the former can be implemented by altering incentives and can be more easily implemented. He emphasized the importance of designing governance reform to suit specific country contexts. In analyzing the relationship between economic growth and governance in developing countries of Asia, Quibria (2006) finds governance to be inversely related to the economic growth rate, and suggests that governance indicators change in their importance for growth at different stages of development. The results of Zhuang, De Dios and Martin (2010) show that developing Asian economies with scores in 'Government Effectiveness,' 'Regulatory Quality' and 'Rule of Law,' above the global means (after controlling for per capita income) in 1998 experienced higher growth on average during 1998-2008 compared to those with scores below the global means.[5] They therefore recommend using these governance indicators as potential entry points in development strategies for many countries in the region. Using a panel regression approach Nawaz, Iqbal and Khan (2014), find 'Control of Corruption' and 'Rule of Law' to be the key determinants of long-term economic growth for selected Asian countries. Their results lend support to a key finding of Quibria (2006) that the stages of economic development matter in the effects that the governance indicators have on economic development.

Hassan and Raihan (2017), on the other hand, use 'growth episodes' of Bangladesh from 1972 to 2010 to evaluate the relationship between economic institutions and economic growth. The 'growth episodes' are characterized by a significant increase in the GDP growth rate. They find three such episodes in the thirty-year sample period. Using property rights institutions, contractual institutions and state capacity as measures of institutional quality, they showed that the latter explain the exerted significant impact on successful growth episodes. They argue that political settlements in Bangladesh is characterized by the ability of political elites, irrespective of political identity and preferences, to separate

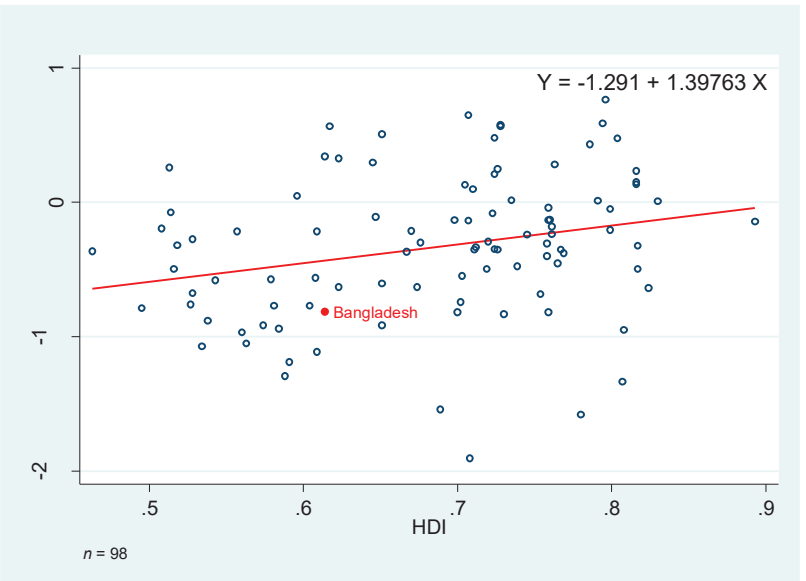
5 These—'Government Effectiveness,' 'Regulatory Quality' and 'Rule of Law'— are three of the six World Governance Indicators developed by the World Bank and discussed later in the section and referred to in other parts of the paper.

the economic and political rents and use them to incentivize the private sector in furthering market-led growth.

Using a principal components analysis on disaggregated data on the underlying indicators of the Global Competitiveness Index[6] (WEF, 2019) from 1998-2004, Roy (2005) finds that political governance, adoption of internet technologies and effective public institutions are the most important components of global competitiveness and that public institutions and internet technologies are more important determinants of per capita income than political governance in Bangladesh.

The six World Governance Indicators (WGI) of the World Bank, i.e., Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness Regulatory Quality, Rule of Law, and Control of Corruption are the most widely used (World Bank, n.d.-b). The values or scores of the WGI range from -2.5 to 2.5, with higher index values indicating better governance. The common methodology used in constructing the WGI across countries and their availability over a time period enables spatial and temporal comparability in empirical analysis. For purposes of this paper, simple statistical analyses were used to test whether the relationship between the governance indicators and development was positive and significant. A simple average of the scores on the six WGIs was computed for each MIC using a sample of 98 MICs in the World Bank's classification.[7] This may be viewed as an 'index of governance performance' for each MIC. In Figure 1, the average score for MICs thus computed is plotted against the corresponding Human Development Index (HDI) (UNDP, 2019a). The trend line in the Figure indicates a positive and statistically significant relationship between the average WGI score of the MICs and their HDIs. In other words, even in the MICs, countries with higher HDI scores tend to have higher scores on these governance indicators.

Figure 1: Scatter Plot of HDI and Average WGI for MICs (2018)



6 This is discussed in detail later.

7 The last year for which data was available for all countries is 2018.

Sources: Human Development Report (HDR), UNDP and World Governance Indicators (WGI), which are available at http://www.hdr.undp.org/en/data and http://info.worldbank.org/governance/wgi/#home, respectively.

In further analysis of the relationship, correlation coefficients between each of the six WGIs and the corresponding HDI of the MICs was estimated. The correlation parameters are shown in Table 1 and indicate that three of the six WGI, i.e., Government Effectiveness", "Regulatory Quality" and the "Rule of Law," are positively related to the HDI. And, further that the coefficients are statistically significant (Table 1), suggesting that their significance in governance performance.

Table 1: Correlation between HDI and WGI

	HDI
Control of Corruption	0.160
Government Effectiveness	0.387***
Political Stability and Absence of Violence/Terrorism	0.161
Regulatory Quality	0.327**
Rule of Law	0.203*
Voice and Accountability	0.092

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

2.2 Governance Indicators: Bangladesh and Comparator Countries

In the mainstream discourse on reforming governance institutions, the most commonly used approach is to construct indicators and synthetic indexes which purport to 'measure' the impact of the reforms on economic growth or development. The World Bank, global think tanks as well as academic institutions developed a wide array of such indicators and indexes which are widely used by development practitioners and policy makers. As noted above, the most commonly used among these are the six WGI published by the World Bank annually for over 200 countries. Another widely used set of indicators are the World Bank's 'Doing Business' indicators based on scores that rate business regulations and property rights for 190 countries. The 10 indicators of 'Doing Business' are: starting a business, obtaining permits, supply of electricity, registering property, accessing credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency. They are constructed using a weighted average of the component sub-indicators with scores ranging from 0 to 100. Again, higher scores reflect better performance and vice versa.

The World Economic Forum's (WEF's) Global Competitiveness Index (GCI) mentioned above is also commonly used and measures the 'competitiveness' of economies defined as a combination of ''institutions, policies and factors that determine the level of productivity of an economy." It is constructed for 140 countries and categorizes 114 relevant indicators into 12 pillars: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation. These pillars are further regrouped into three sub-indexes based on their stages of development and their weighted average yields the score for each country.

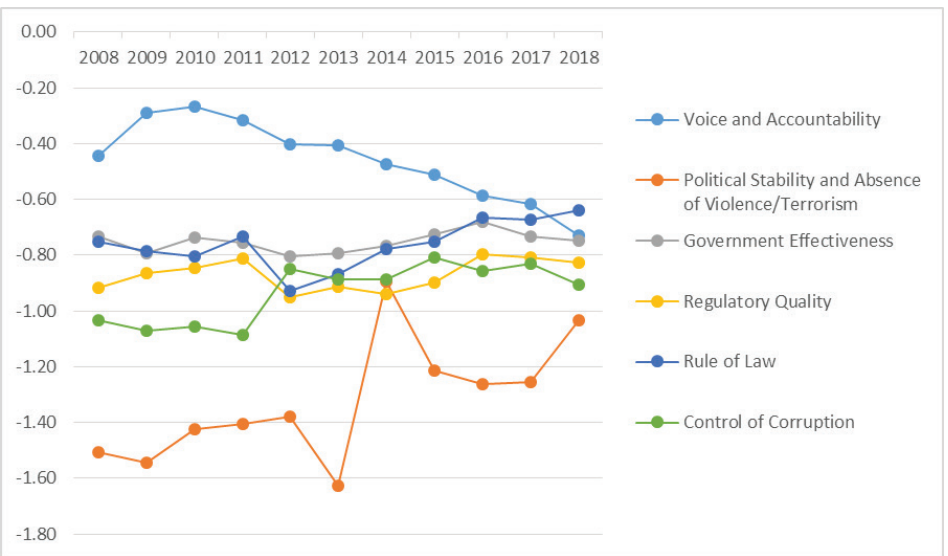
A recent study by Economic Development & Institutions (EDI, 2020) analyzes synthetic institutional indexes constructed using a set of 97 indicators for 105 countries (both

developed and developing). The six synthetic indexes are Democracy, the Rule of Law, Business Environment, Bureaucracy, Land and Human Rights. Each indicator value or score ranges from 0 to 100, with higher values reflecting better institutions.

In view of the conceptual complexity of the term 'governance' it is difficult to specify indicators or indexes of governance and to measure their impact on economic development. The limitations of these indexes are well recognized. For example, most are based on perception surveys or subjective ratings on the underlying indicators. In some cases, multiple sources of data including those from sub-indicators of the WGIs are used. Changes in methodology over time also pose problems in interpreting them. Despite these limitations, as noted above, governance indicators and indexes are widely used in empirical analysis and the public discourse, as well as by policy makers and development practitioners. This paper also uses indicators and indexes for purposes of analysis, illustration and comparison with other countries throughout the remainder of the paper.

Trends in the scores of the six WGI for Bangladesh are shown in Figure 2, and indicate that 'Political Stability and Absence of Violence/Terrorism' improved in most of the period from 2008-2018, along with 'Government Effectiveness,' 'Rule of Law' and 'Regulatory Quality.' Among the indicators, the scores on 'Political Stability and Absence of Terrorism/ Violence' improved markedly reflecting the government's steps to combat extremism. It improved somewhat in case of 'The Rule of Law.' Significantly, the scores on the 'Control of Corruption' did not change since 2012. The score on 'Voice and Accountability' sharply declined. The two remaining indicators did not change significantly. The most significant feature of Figure 2 is the low scores on the governance indicators, which exemplifies Bangladesh's governance challenge.

Figure 2: Trends in the WGI Scores of Bangladesh

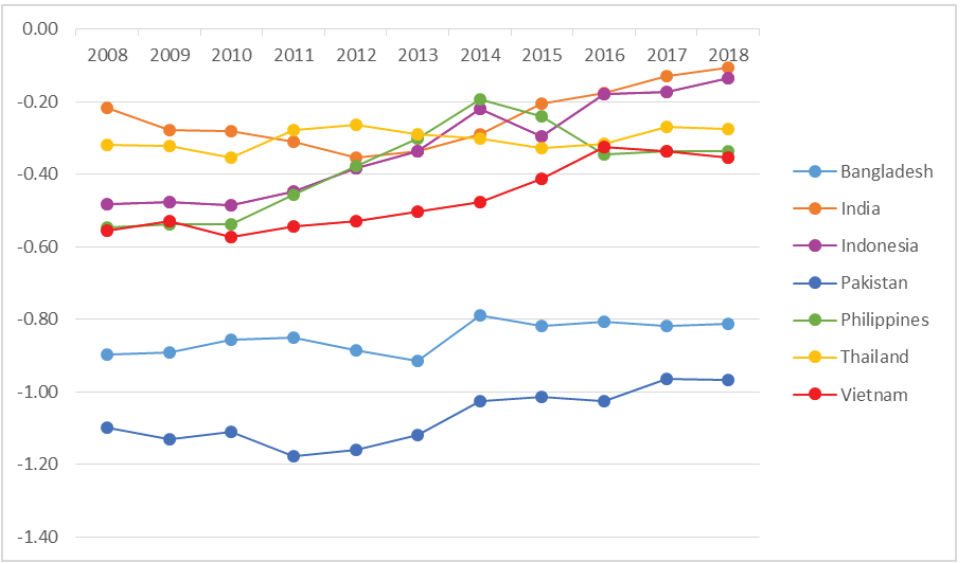


Source: World Governance Indicators (WGI). Available at http://info.worldbank.org/governance/wgi/#home.

The scores provide greater perspective when compared with other countries, which already successfully transitioned to higher income categories and are currently ahead of

Bangladesh in the path to emerging as upper middle income countries. The average WGI of a select group of countries shown in Figure 3 adds greater perspective to the governance predicament—Bangladesh's average score is below all the countries except Pakistan, indicating the need for much further improvement.

Figure 3: Average WGI Scores of Bangladesh and Selected Asian Countries

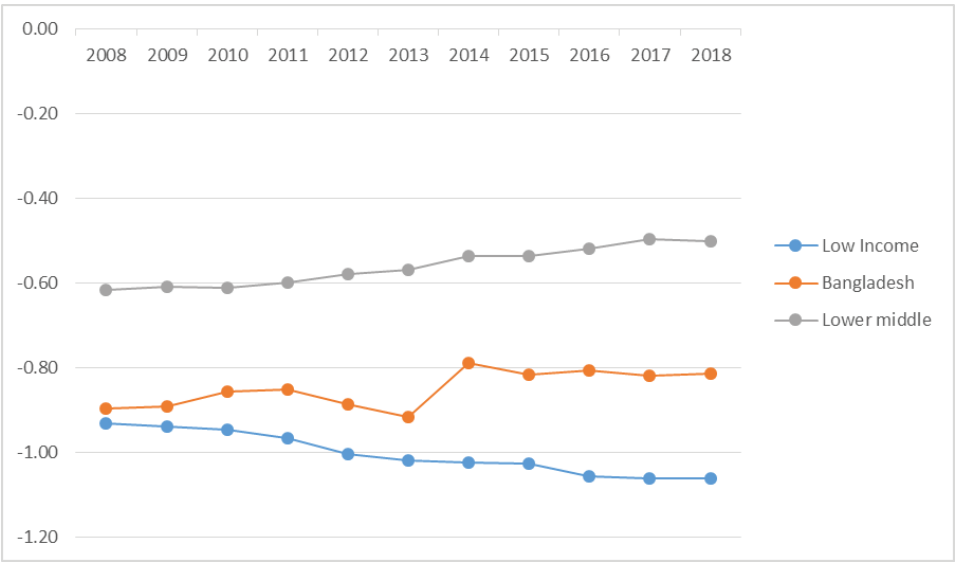


Source: World Governance Indicators (WGI). Available at http://info.worldbank.org/governance/wgi/#home.

To add further perspectives on Bangladesh's governance performance, a comparison of the WGI is made with the lower middle income countries (LMICs) and low income countries (LICs) using the World Bank's classification, This required computing the 'governance performance index' for each of the two country groups. These were computed in two steps. First, the average WGI score for each LMIC was computed (as in the case of Bangladesh, explained in the preceding sub-section) and second, the country averages were averaged across the countries in each group to obtain the average score for the LICs as a whole, and similarly for the LMICs. Figure 4 reflects some important facts. First, the LMICs had the highest average governance score, LICs had the lowest score and Bangladesh's average score was in between the two. Second, governance performance of the LMICs shows an upward trend during the period while the opposite was true for the LICs. Bangladesh's governance performance, however, fluctuated around a positive trend, starting with an average score closer to that of the LICs. Third, Bangladesh's average governance score increased significantly relative to the LICs over time.[8] And fourth, Bangladesh and the other two country groups had negative average governance performance scores throughout the decade-long period. The findings further indicate that the country group with the higher per capita income also had a higher average governance performance score in each of the 11 years shown in the figure, i.e., that higher governance scores and higher incomes were positively correlated.

8 The sharp increase in average score resulted from a jump in the score of Political Stability and Absence of Violence/ Terrorism Indicator in 2014.

Figure 4: Average WGI Scores of Bangladesh with LICs and LMICs (2008-2018)



Source: World Governance Indicators (WGI). Available at http://info.worldbank.org/governance/wgi/#home.

The governance indicators and indexes noted above are closely monitored by many international organizations, including the business community, and influence perceptions of governance and investment 'climate' in Bangladesh. It is thus important that the government steps up measures to improve its WGI scores in absolute terms as well as relative to other countries to increase its global rankings.

In two other widely used indexes of economic governance, Bangladesh moved up eight places in the Doing Business Index in 2020 from the previous year, but still ranked low—168th out of 190 countries in the index (World Bank, 2020b); and lost two places in Global Competitiveness Index 2019 from the previous year and ranked 105th among 141 economies (WEF, 2019). The low global rankings indicate that the overall business climate in Bangladesh relative to other countries needs to improve significantly. This is a concern for both the local private investment as well as foreign direct investment and will need particular attention in the 8th Plan. ,

A recent study provides a comprehensive analysis of governance and institutional indicators of 105 countries in 2016, including Bangladesh, derived from a set of 97 existing indicators (Raihan and Ferdousi, 2020). The relative results based on the distribution of the computed indexes showed that Bangladesh was in the bottom quartile in all six indicators, and in some cases in or around the bottom 5% ("Rule of Law", "Bureaucratic Quality" and "Land" indexes). In "Human Rights", Bangladesh was positioned at the upper limit of the bottom 10%. Only in terms of "Democracy" and "Business Environment" the country managed to fare better than the bottom 10%.

The discussion above clarified the importance of institutions and governance in development, assessed the status of governance in Bangladesh, and compared it with other relevant countries and country groups. It also analyzed the relationship between the WGI

and well being using the HDI. The analysis of governance indicators and indexes showed low performance in the past decade and the magnitude of the challenge of governance for Bangladesh going forward. It also presented empirical evidence from several studies which suggest that higher income levels are associated with higher governance scores. In empirical research, much of the difficulty in establishing a clear causal relationship—that governance performance and development or well being, are inversely related—is mainly due to the complexity of measuring the former. In ending the discussion in this section, it would be worthwhile to emphasize the seminal importance of institutions in development. Williamson (1994) stated it thus:

"Why are the ambitions of economic development practitioners and reformers so often disappointed? One answer is that development policy makers and reformers are congenital optimist. Another answer is that good plans are regularly defeated by those who occupy strategic positions. An intermediate answer is that institutions are

important, yet are persistently neglected in the planning process." Institutions, including those of governance are ignored only at the peril of a country's transition to higher development and well being.

3. Strengthening Governance Institutions: Progress, Issues and Challenges

The government implemented a wide range of measures and initiatives to strengthen public institutions and improve governance in the past decade. These were classified into three sub-themes: judiciary and the rule of law; public sector capacity; and economic governance.[9] As alluded to in Section 1, the themes are directly related to SDG 16: Peace, Justice and Strong Institutions, which as noted above were embedded in the 7th Five Year Plan. The measures implemented by the government were meant to improve the efficiency and effectiveness of public institutions and enhance the capacity of the State. Improvements in business processes used by public institutions and delivery of services by them were particularly targeted by the measures. The measures would result in faster dispensation of justice; make the public bureaucracies more capable of using technology, and speed up decision making and public service delivery; make public information more transparent and accessible; and strengthen market and regulatory institutions to support higher economic growth and empower the people. The section includes three sub-sections which were also the key themes of the 7th Plan's public institutions and governance agenda: the judiciary and the rule of law (3.1); public administration capacity and public financial management (3.2) and economic governance ((3.3).[10]

3.1 Judiciary and the Rule of Law

Some 31 million people mostly living in rural areas experience legal problems every year (HiiL & BRAC, 2018), but remain beyond the reach of the formal justice system, and the majority of the population has little or no access to either formal or informal justice institutions. High costs involved further constrain access to legal and judicial services. Moreover, the justice system burdened with a large backlog of cases delays the dispensation of justice especially to middle and low income groups, and the poor and marginalized. Violence against women and children is widespread and continues to pose a serious

9 The terms 'public sector' and 'public institution,' are used interchangeably in the text. The same holds for 'public administration,' 'public bureaucracy,' 'bureaucracy,' 'public official' and 'government official'.

10 A more detailed discussion on the progress achieved in the measures taken under the 7th Plan is provided in a BIGD paper (Rahman, 2020) prepared as a precursor to this paper.

challenge. Over the past decade, the government implemented many measures to improve the efficiency and effectiveness of the formal, semi-formal and informal judicial and legal institutions. Significantly this period also witnessed the establishment of the National Human Rights Commission (NHRC) as an independent entity to address human rights concerns. The measures taken in the judicial institutions are reviewed in the following subsections.

3.1.1 Formal Justice Institutions

The most significant measures in the formal justice system taken in recent years, include: the establishment of the National Justice Coordination Committee (NJCC) to oversee the justice system; the preparation of a standardized set (9-point) of criteria for the recruitment of judges by a High Court Division bench aimed at increasing transparency of judicial appointments; and the initiation of a four-year e-Judiciary project by the Supreme Court to automate administrative and trial procedures and provide some e-judicial services, as well as to enhance digital literacy and skills of judges and other judicial officials.

One the most pressing issues in the judicial system is the large case backlog in the formal court system, which despite being explicitly targeted for reduction by the government, has worsened. At the end of 2018, i.e. the third year of the Plan, 3.6 million cases remained pending in the court system, of which 2.9 million were in the lower courts, 0.5 million in the High Court Division and the rest in the Appellate Division. Notably the government's total case backlog limit was 3.3 million by 2020, but it was exceeded two years earlier. The number of cases per judge in 2018 was 3143 in the Appellate Division, 5500 in the High Court Division and 1700 in the lower courts, indicating the severe shortage of judges. The national case disposal rates of the Appellate Division and the High Court Division were 25 percent and 9 percent respectively in 2020, which were below the rates of a decade earlier. In 2018, 84 per cent of detainees were awaiting sentencing. These data reveal major shortcomings in the justice system. Several factors account for the 'logjam' in case disposals, e.g. acute shortage of judges, complexity of judicial procedures, loop holes in the laws and problems in selecting cases sent to the higher courts.

3.1.2 Semi-Formal Justice Institutions

The legal framework for village courts (VCs) was significantly strengthened through an amendment to the Village Court Act, 2006 in 2013 followed by the issuance of rules governing them in 2016. The VCs are currently implemented as a government project.[11] At the end of 2019, VCs were functioning in 1,080 *union parishads* in 27 districts across all 8 divisions reaching nearly 20 million people. They received about 50,000 cases per year from July 2017 to February 2020.[12] A survey by BRAC Institute of Governance and Development (BIGD) found that case resolution is faster in the VCs—an average of 40 days relative to 6 months in the traditional *shalishi* system (Matin, 2019). The VCs however, face a number of challenges. For example, cases settled by them are subject to a ceiling of BDT 75,000 in compensation payments per case. However, most cases arbitrated by them relate to land, and their values are mostly above the ceiling; they do not have a legal mandate to enforce settlements arrived at and there is a general lack of awareness about them. These issues notwithstanding, the village court is an innovative institution and an increasing number of people are availing its services and has strong potential for expansion across the country.

11 "Activating Village Courts in Bangladesh Project" phase I and II (AVCB II) under the Local Government Division (LGD).
12 https://www.villagecourts.org/case-statistics/

The National Legal Aid Services Organization (NLASO) was established in 2000 to provide legal assistance to the poor and marginalized groups, and experienced large expansion during the 7th Plan period. Against a target of providing legal aid services to at least 37,000 people per year by 2020, the NLASO provided services to 82,000 people in FY2017-18, and 100,806 people in FY2018-19, exceeding the targets by very large margins (Annual Report 2018-19, NLASO, 2019). Establishing a national hotline to deliver services played a key role in achieving these results. District Legal Aid Offices, Supreme Court Legal Aid Office, and Labor Court Legal Aid Cells as well as the National Helpline Call Centre were operational in 40 *zilas*. Although the government target of resolving at least 25,000 disputes per year by 2020 will not be achieved by NLASO, its rapid expansion in recent years indicates that this alternative dispute resolution mechanism is proving to be effective and needs to expand even more rapidly in the next plan period.

3.1.3 Law Enforcement

Law enforcement is critical to establishing and fostering the rule of law. Countries cannot develop and advance well being without peace and stability. Further, achieving a peaceful society is a key element of SDG 16. The government significantly strengthened the law enforcement institutions, i.e., the police, RAB, VDF and BGB in the past decade. This sub-section reviews only indicators of crime and violence included by the government in the results framework of SDG 16, and monitored by it to track progress in them. Slow progress in these indicators would undermine the attainment of SDG 16 by Bangladesh.

Violence against women and children is a deep rooted and widespread practice in Bangladesh and it is committed to combating such violence, including trafficking. A government survey showed that 38 per cent of women experienced some form of violence in the past 12 months (GED, 2020). To this end, the government is implementing the Multi-Sector Program on Violence Against Women (MSP-VAW) under which the Ministry of Women and Children's Affairs manages eight One-Stop Crisis Centres (OCCs) at the division-level and 60 One-stop Crisis Cells (OCCs) at the upazila level. The latter provide information and referral services to women victims as well as child victims of violence in one place.

A total of 41,903 victims of VAW received services at the OCC of whom only 10,807 victims filed cases against the offenders till March 2020. The Multiple Indicator Cluster Survey (MICS) of 2019 (BBS and UNICEF Bangladesh, 2019) indicated that a negligible percentage of women victims of domestic violence reported them to the police but it increased five-fold from 2015 to 10.3 per cent in 2019. These women received legal services under the NLASOs. However, 72 per cent of the women victims of domestic violence never reported it to the police. The government data on human trafficking shows that it declined from 0.85 per 100,000 persons in 2015 to 0.61 per 100,000 persons in 2018, and it was 0.58 for men and 0.63 in case of women. This is a major challenge and will require much greater empowerment of women, sustained capacity building of OCCs, and more resources and awareness-raising among the public.

Turning to some other indicators of violence, the intentional homicide rate per 100,000 population fell from 1.9 in 2015 to 1.4 overall in 2019, and for females the rate fell from 0.8 to 0.7.[13] Conflict-related death rate per 100,000 persons stood at 0.2 overall and 0.1 for females in 2018. Regarding domestic violence, 57.7 per cent of women who ever

13 The baseline for tracking all SDG indicators is 2015, i.e., the year in which the SDGs were launched, dependent upon data availability.

married experienced violence from their husbands, and 38 per cent faced violence in the last 12 months. In 2018, overall 85.9 per cent of the people felt safe walking on their own in their neighbourhood whereas 83.7 per cent women did so. Among children aged 1-14 years, 88.8 per cent faced corporal punishment or psychological aggression in 2019, and the rate was 88.5 per cent for females. The victims of human trafficking per 100,000 people improved from 0.9 in 2015 to 0.6 in 2018 for the overall population, but for women, however, there was no improvement. Only 10.3% of women who faced violence from their partners reported the same to relevant authorities in 2019, which is nevertheless a significant improvement over 2.5% in the baseline. The survey showed that 83.6 per cent detainees were pending sentencing in 2018, which was twice the government target in 2030. Regarding open bribery, 31.3 per cent of those surveyed had at least one contact with a public official to whom they either paid a bribe or were asked to pay a bribe in 2018. During the same year, 39.6 per cent of the population expressed satisfaction with their last public service experience. The survey also showed that 56.2 per cent of children under 5 years old had their births registered in 2019, up from 37 per cent in 2012-13, reflecting significant progress. While on average, 35.6 per cent of the population reported discrimination or harassment in 2018, and for females it was 36.9% (GED, 2020; GoB, 2020).[14]

The problem of Rohingya refugees seeking safe haven in Bangladesh has challenged the country since the late 1970s. However, the sudden influx of one million refugees crossing the border in waves in a period of just four months in 2017 created unprecedented crisis for the government. Nevertheless, it opened the borders and provided sanctuary to the Rohingyas on humanitarian grounds. The management of over 1.5 million Rohingya refugees in southern Cox's Bazar zila has severely stretched the administrative, financial and law enforcement capacity of the country. Of particular concern, in this regard, are issues relating to illegal migration to Southeast Asian countries, i.e., Thailand, Malaysia and Indonesia, endangering their lives in the process; and human trafficking, especially of women and children, which have increased the risks of drugs trafficking and extremist violence, threatening peace and stability of Bangladesh and the region. While, the Rohingya issue is an international concern and must be resolved through international means, the challenge for the government going forward will be to strengthen the law and order institutions to prevent illegal migration and trafficking in people and drugs.

3.1.4 The Right to Information

Right to information (RTI) Act 2009 was adopted to empower citizens with information on the government's decisions and activities. Exercising their right would increase transparency of the government's work and promote accountability of public servants. The RTI Act, 2009 followed the signing of the UN Convention on Anti-Corruption by Bangladesh and the adoption of the National Integrity Strategy (NIS) by the government to implement it in the same year. The Information Commission was established as the secretariat for all work relating to RTI. These institutions provide a solid framework to enhance transparency and accountability of government.

A study by Ahsan, Hasan and Imran (2020) to mark the tenth anniversary of the RTI found that while there was notable progress in strengthening the 'supply-side', i.e. establishing the institutions noted above, progress on the 'demand-side', i.e. using the RTI to seek information, lodging complaints, etc. by citizens, civil society organisations was weak.

14 Citizen Perception Household Survey (CPHS) 2018, BBS. Baseline (2015) data not available.

Out of 12,800 citizens surveyed for the study, only 7.7 per cent were aware of the RTI Act and its provisions. Further, about two-thirds of the 768 designated officers (DOs) surveyed across all *zilas* of the country reported that they did not receive any application from citizens seeking information under RTI at their offices. The survey also found that no action was taken by the IC in 44 out of the 88 RTI cases, while some form of action (e.g. departmental, fine and reprimand) was taken against 44 bureaucrats.

Although the IC has the power to impose penalties on public officials under the Act, the IC has been hesitant to use it. The findings show that IC being led by retired senior civil servants for most of the past decade impeded awareness raising and responsiveness to requests for information, and acting against fellow civil servants in cases of wrong doing under the RTI. The study viewed the traditional practice and mind set among public servants of preserving government information rather than sharing it with the public as a major constraint to successful operation of the RTI Act.

The government targets on the "number of queries acted upon by public institutions under the RTI Act" were nevertheless achieved in 2016 and 2017. Data for later years are however not available.

3.1.5 Anti-Corruption Commission

Better governed countries have lower corruption and higher levels of income or well being levels, however measured and vice versa. A comparison between the WGI's 'Control of Corruption' scores for OECD countries and low income countries, for example serves to illustrate this. The concerns about corruption mainly relate to loss of tax and other public revenues, misallocation of resources; high transactions costs; weak business confidence; weak enforcement of laws and regulations; creating 'rent space' and seeking rent; trafficking in drugs, women and children; abuse of public office or authority to advance private or group interests at the expense of the greater public good leading to erosion of public trust in government; and distortion of social values. Several studies indicate that corruption can increase economic growth.[15] Without delving deeper into the finer points of this debate, this paper favors the normative view, attaching importance to the systemic degradation of ethics and the rule of law brought about by pervasive corruption.

In democratic societies, corruption can also be politically challenging since elected governments must seek reelection periodically. Their plans and policies thus commonly include strong anti-corruption commitments and measures. "Building a society free from corruption" is a tenet of Vision 2021, and the Perspective Plan 2010-2020 also emphasizes the need to eliminate corruption. Following the ratification of the UN Convention on Anti-Corruption, the government prepared the National Integrity Strategy (Cabinet Division, 2012) with action plans to curb corruption. The NIS shifted the government's anti-corruption strategy towards a 'whole of government' approach.

The authority to combat corruption in Bangladesh is vested in the Anti-Corruption Commission (ACC). It is mandated to function as an independent, self-governed and neutral entity. The ACC has preventive and investigative functions, and initiates prosecution against acts of corruption. In recent years, the ACC's preventive activities included anti-corruption awareness events across the country, e.g. debate and essay competitions in educational institutions, public rallies, action programmes in several *zilas*. These

15 See Hassan and Raihan (2017) for example.

preventive approaches, while well-intentioned, proved difficult to sustain as they depend on the motivation of ACC bureaucrats. The ACC also conducted 144 anti-corruption drives so far to identify causes of corruption, mismanagement and public harassment in public agencies, and recommend remedial measures. While establishing anti-corruption cells in key government departments was targeted, it could not be implemented so far. Significantly, the ACC was also unable to implement a strategy to track the assets and income of public representatives to prevent corruption.

A TIB report on the ACC's effectiveness, using 50 indicators grouped into seven dimensions, indicated a score of 72 per cent on prevention, education and outreach, which is considered an area of strength for the institution; 61 percent on financial and human resources; 29 per cent on public perception of ACC; and an overall score of 61 per cent, which placed it in the moderate category. The survey also showed poor public awareness of its work.

Even though ACC was mandated to function independently under the 2004 Act, amendments of laws and new legislation in other sectors, such as the Government Servant's Act, 2019, include provisions which are not consistent with its independent role. For example, the latter requires that neither cases may be filed nor arrests of public officials be made without prior government approval.

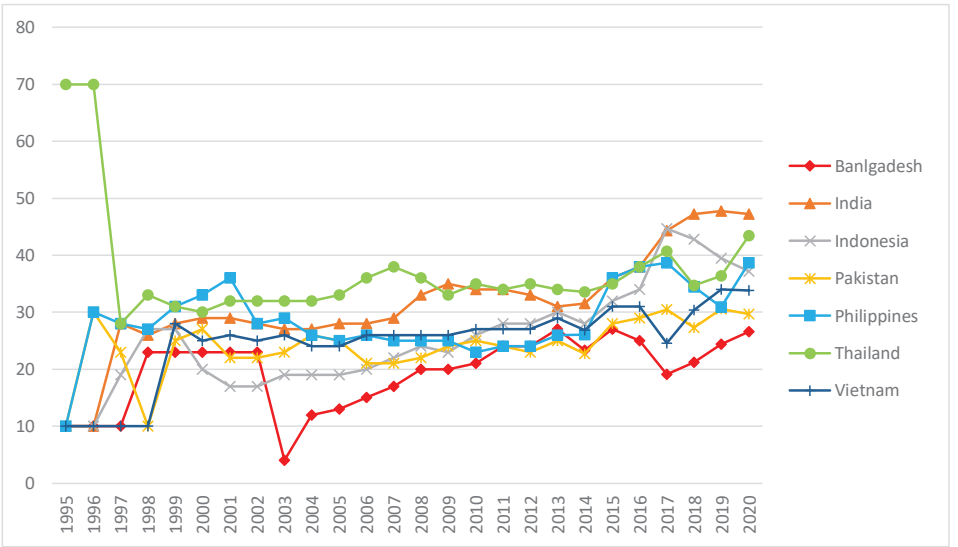
The ACC is overwhelmingly staffed by staff who served in its predecessor institution—the erstwhile Anti-Corruption Bureau. It lacks specialized skills and resources. There is also a significant mismatch between existing skills and those required to design and implement innovative new anti-corruption practices and strategies. For example, it lacks the skills and resources to investigate cases of corruption related to the banking sector and property embezzlement—areas alleged to suffer some of the worst incidents of corruption. Between 2006 and 2018, ACC filed 848 cases based on 4038 investigations and its average conviction rate was 57.5%, well below the international standard of 75 percent. The convictions mostly involved lower level public functionaries (ACC Annual Reports, 2016-2018, ACC, n.d.).

The limitations of Bangladesh's anti-corruption initiatives and strategies are reflected in its low rankings on the various global indexes which have persisted for many years. The WGI's 'Control of Corruption' score for Bangladesh was -0.91 (on a scale of -2.5 to 2.5)[16], with a percentile rank of 16.8, in 2018, which in recent years was closer to the average score of the low income country group and well below the average score of -0.39 of the MICs, and it ranked 174 out of 209 countries in the sub-index. Figure 5 shows the 'Government Integrity Index' or GII[17] for selected Asian countries. Higher values of the index indicate lower corruption and vice versa. Bangladesh's performance on this index is generally higher than its score on WGI's 'Control of Corruption.' The GII also indicates a consistent increase in the index in the last three years. It ranked 144th out of 185 countries in 2020. Bangladesh should track its scores and rankings on these indexes and improve its global standing.

16 The higher the score on a scale of -2.5 to 2.5, the better is the corruption environment and vice versa.

17 The Government Integrity Index (GII) is a sub-index of the ' Index of Economic Freedom' constructed by the Heritage Foundation, and is computed based on a set of corruption-related indicators in the overall index. Important factors in the GII include systemic corruption in decision making by such practices as bribery, extortion, nepotism, cronyism, patronage, embezzlement, and graft. Such practices weaken government integrity and reduce public trust, increasing the transaction costs of economic activities.

Figure 5: Bangladesh's Comparative Scores in Government Integrity Index



Source: Index of Economic Freedom, The Heritage Foundation, which is available at https://www.heritage.org/index/explore?view=by-region-country-year&u=637321329868577624.

3.2 Public Sector Capacity

The bureaucracy is a profoundly important public institution and plays a critical role in implementing the vision, plans and policies of the political leadership. As a permanent institution of the state, it has the most knowledge of the rules and regulations by which it must be governed, and functions as its trustee. Reform of the bureaucracy is therefore essential to making it efficient and effective over time. The government implemented a wide range of measures and initiatives in the past decade—bold and ambitious in some cases—to reform the public bureaucracy. The measures do not seem to follow a particular theoretical model, however, they are consistent with elements of the New Public Management (Hughes, 1998) and New Public Governance (Patapas, Raipa & Smalskys, 2014) models, such as performance evaluation, managing for results, corporate management principles, e-government (digitizing government work flows, e-procurement, e-public services, etc.), public budgeting and expenditure management, public participation in decision making, etc. The initiatives aimed to change bureaucratic attitudes and efficiency to suit the changing development context of a country aspiring to achieve middle income status by 2021 and upper middle income country status by 2031. While there were successes in some areas, they lagged behind in other areas. Some of the important challenges related to ownership of reform measures, inertia of traditional attitudes and practices, mismatch between available and required skills, inadequate resources and scaling up successful initiatives.

3.2.1 Public Administration and e-Government

The government performance management system (GPMS) was launched in 2014 to make public institutions more accountable for the outputs and outcomes of their work. The focus of performance management shifted from strategy and policy to management of public officials to assist them in setting work objectives and targets in line with the

government's vision, plans and policies. The Annual Performance Agreements (APAs) are an annual 'contract' between officials and their supervising senior officials and meant to achieve results. The government implemented the APA under the GPMS. The APAs are accomplished online by public officials wherever IT and LAN connectivity permit. The APAs were initiated in 10 ministries and presently cover officials of all ministries and public agencies. An online Grievance Redress System (GRS) was also initiated, where government officials may make complaints, appeal redress decisions and track their status online. The appointment of women in senior positions in government is still below the 25 per cent target of the 7th Plan. This is remains an issue to be addressed with priority going forward. There is an old proverb which says: 'Women hold up half the sky' signifying the importance of women in running the affairs of the state. This will require a targeted approach to enable the career progression of women and proactive policies to reduce female dropout rates in secondary education and to increase incentives to women to complete tertiary education and hence their capacity to enter the civil service.

The government's measures to strengthen e-government systems reflect objectives in the Perspective Plan, and the 6th and 7th Plans. Following these pronouncements, the government prioritized digitization of many public services across government ministries and departments at the national level as well as at the local government levels. Digitization activities picked up pace with the launching of the Perspective Plan 2010-2020 and were scaled up significantly in recent years. The e-government activities are essentially a set of 'business process re-engineering' measures but for purposes of simplicity and increasing ownership by the bureaucracy were rebranded as service process simplification (SPS) activities in recent years. They are intended to modernize the public administration system by improving efficiency, transparency and accountability. E-government measures helped to establish online connectivity across 46,000 public sector offices and provide online information and services via a web portal. The UNDESA's (2020) report on e-government shows that Bhutan, Bangladesh and Rwanda have online service index values that are higher than their respective Human Capital Index (HCI) and Technology Infrastructure Index (TII) values.

The SPS allowed government officials to visualize work processes via flow charts and simplify or eliminate some to save time and cost. Initially, the SPS was used to simplify the pension delivery system for retired school teachers to enable them to receive pensions from their local upazilas. Subsequently, it was expanded to redesign workflows within and between ministries. By early 2020, SPS expanded to include 424 public services and over 3600 civil servants received training in it. The services are provided through *"Sebakunjo,"* a government web portal launched in 2014 and steadily expanded since then. A UN report suggests a saving of $8.14 billion due to the simplification and digitization of the public services (UNDP, 2019b). The "Aspire to Innovate" (a2i) project has been the government's hub for developing the technology solutions for the e-services.

The measures taken so far to increase e-government services and extend its reach are a significant step towards increasing the efficiency of the country's administrative systems and services. However, the adoption of technology in public bureaucracies is a challenging task as it requires not only skills but also a change in mind set. Moreover, digital literacy in the country is still low and the use of online services is constrained by the existing IT infrastructure. While the potential benefits of investment in digitizing public services and IT infrastructure can be high, they should be subjected to third-party evaluations, to enable

more effective lesson learning from implementation experience and incorporation in future design and scaling up of e-government activities.

The Cabinet Division initiated preparation of a digital Land Information Service Framework (LISF) which is an inter-connected digital system involving three services, namely e-mutation, RS *khatiyan* and the district record room, and covers all land offices at the *union parishad, upazila* and *zila* levels. It was piloted in 45 *upazilas* under seven districts from 2011 to 2017 and is being scaled up gradually to all districts. Till 2019, 485 *upazila* land offices and circle offices, and 3617 union land offices were providing the e-mutation service. The RS khatiyan service and record room services are also making progress. The LISF aims to improve the efficiency of existing processes for accessing land transfer and ownership records, which at present involve two main agencies—the Ministry of Land and Ministry of Law, Justice and Parliamentary Affairs—and are complex, non-transparent and inefficient, and as such the leading source of conflict and crime in society. Nearly 1.5 million land-related cases were pending disposal in the *upazila bhumi* (land) offices in 2017. It is an ambitious initiative with large potential social benefits. However, LISF will take time to be fully developed.

The Electronic Government Procurement (e-GP) introduced in 2008, involves online bid submissions for government contracts as well as online posting of results of the bidding process via a web portal. The Central Procurement Technical Unit (CPTU) data suggest that e-GP adoption has progressed rapidly and continues to improve.[18] By 2019, 55 percent of all public procurement was done under e-GP (World Bank, 2019b). Although, it is unlikely that the 7th Plan target of bringing all public procurement under e-GP by 2020 will be met, the progress under the Plan has been impressive. The e-GP also increased the transparency of public procurement.

A social accountability mechanism has been included to monitor the implementation of small civil works procured under e-GP, by a citizen's committee at the *upazila*-level. The mechanism is being extended in phases to all *upazilas*. The findings of the project's implementation reviews indicate that the management of civil works improves significantly when citizens are engaged (Zillur & Hoque, 2017), and that ownership and awareness of the civil works in the local community increase. However, the social accountability mechanism does not extend to the upstream of the procurement process, i.e. the bid opening and evaluation stage. A study by Abdallah (2015) found that procurement under e-GP reduced the price-to-cost ratio by 12 per cent compared to traditional paper-based procurement. But there is no evidence so far that suggests a reduction of corruption in projects procured under e-GP, which was an important objective of the system. Also, the government response to local complaints needs to be effective and quick. These issues, along with the risks of elite capture of the citizen's committee, are challenges that should be addressed in the future.

The strengthening of Union Digital Centres (UDCs) at the *union parishads* was another important e-government important measure with the technical backup provided by a2i. The UDCs function as 'one-stop' public service access points for the local population. At present, they can apply online for birth registration certificates, NIDs or VGD/VGF cards, register for SSC, and check their SSC and HSC examination results at the UDCs. The UDC provides the public services under a management contract between the *union parishad* and a local contractor. Such a business model reduces pressure on *union parishad*

18 The CPTU is the focal point for e-GP and is located at the Implementation, Monitoring and Evaluation Division, Ministry of Planning. Calculated from https://www.eprocure.gov.bd/resources/common/StdTenderSearch.jsp?h=t.

officials and saves time, cost and the number of visits (TVC) to obtain the public services by users. A UN report indicates that the delivery time for local service users decreased by 85 per cent, cost by 63 per cent and number of visits by 40 per cent on average, in 2017 (UNOSSC, 2017). A recent study indicates that high economic returns by three online services delivered by the UDCs online birth registration, exam registration and the social safety net program (SSNP) increased public welfare significantly (BIGD, 2019).

Even though Bangladesh has progressed in e-public services, much further progress is needed. It was ranked 147th (out of 176 countries) in the ICT Development Index 2017 and 116th (out of 129 countries) in the Global Innovation Index 2019.

3.2.2 Public Financial Management

Public financial management (PFM) entails mechanisms and systems which ensure the public expenditures do not exceed the budget constraint. It involves measures that maximize revenues and minimize public expenditures contributing to sound fiscal management. It contributed to improving macroeconomic stability despite rising public spending by restraining the fiscal deficit-GDP ratio from exceeding 5% in the past decade. Relatively low fiscal deficits contributed to lower public borrowing and debt, as well as inflation. Adopting PFM tools, such as Integrated Financial Management Information System (IFMIS) and Integrated Budget and Accounting System (IBAS++),the government significantly improved the quality of financial reporting and analysis, and strengthened the Office of the Comptroller and Auditor General of Bangladesh (OCAG) (World Bank, 2018a).

The government's Public Investment Management (PIM) reforms aimed to improve the implementation of public investment programs included in the Five Year Plans. A PIM unit in the Ministry of Planning was established in 2019 to champion reforms and function as the principal implementing agency for donor-funded projects (Ministry of Planning, 2018a; Ministry of Planning, 2018d). The PIM reforms involve making specific tools of public investment management operational. The tools are being implemented and contributed to evaluation of the Development Project Proposal (DPP) by relevant agencies before their approval and implementation (Ministry of Planning, 2018c). The tools were implemented in two major sectors: (i) Local Government and Rural Development Sector, which has a large span of responsibilities and (ii) Power and Energy Sector, which accounts for a large share of public investment (Ministry of Planning, 2018b; Ministry of Planning, 2018e). The PIM unit has embedded the use of the stated tools within the project planning and implementation process.

The Medium Term Budget Framework (MTBF) guides the preparation of the budget in each fiscal year. The framework ensures that the budget is prepared taking into account the medium-term macroeconomic parameters and fiscal priorities of the government and projects public expenditures for the succeeding 3 years. MTBF includes two-year Forward Baseline Estimates (FBEs) of ministry-wise expenditure, thus ensuring that government expenditures are prioritized and aligned with the available resource envelope. The government also initiated the Public Financial Management Reform Strategy, 2016-2012 under which Medium Term Strategy and Business Plans (MTSBP) are being piloted in four ministries. This marks the beginning of institutionalizing strategic and prioritized budgeting in the government.

Transparency is a major issue in budget preparation and implementation. A survey by the International Budget Partnership (IBP), an international non-profit institution, found Bangladesh's score on the Open Budget Index to be 44 out of 100—least transparent in South Asia in 2017 (IBP, 2018)—a sharp decline from 56 in 2015. The decline is attributed to issues around the budget process, such as non-availability of the citizen's budget prior to its submission in parliament each year, an expressed government objective.

3.2.3 Fiscal Decentralization

Fiscal decentralization has been a 'work in progress' for the better part of a decade. The degree of fiscal decentralization is still starkly low in Bangladesh—local government institutions (LGIs) contribute barely 0.15% of GDP in contrast to an average of 3.3% in developing countries. The government has been strengthening through the Local Government Support Project (LGSP I and II) and LGSP III which is still ongoing. These projects provided substantial training to officials of almost all *union parishads* of the country in planning, financial management, community engagement and service delivery. Capacity development in PFM focused on improving three main areas—planning, quality of audits and financial discipline through online biannual report submissions by *union parishads*. While progress was made in information flows and flow of resources to *union parishads*, major weaknesses in planning, executing budgets, book-keeping, financial reporting and auditing practices remain in the PFM practices of LGIs (World Bank, 2019a, World Bank, 2018b). In parallel with LGSP III, the Municipal Governance and Services Project (MGSP) is also ongoing and aims to develop capacity of the urban local bodies (city corporations and municipalities) in planning, budgeting, accountability, emergency management and municipal infrastructure development. The government did not make significant progress towards increasing fiscal authority of the LGIs.

The LGIs heavily depend on the national government transfers for revenues—over 98% of their revenues are sourced from such transfers (Ahmed, 2020). The government adopted a formula-based system for block transfers to LGIs, which was improved under LGSP III. On the expenditure side, their budgets are approved annually by the national government ministry. As such their spending priorities were aligned with those of the 7th Plan. Their revenues are limited by the collection authority provided by the law. The local revenue base is very narrow with low rates for the taxes and tolls, but these are predetermined in the model tax schedule. There are inconsistencies between the Local Government Act, 2009 and the *Union Parishad* Model Tax Schedule, 2013, which further constrain the revenue mobilization capacity of the LGIs. Although, the block transfer mechanism improved, it still tends to be discretionary and unpredictable in the absence of a formal legally-mandated transfer mechanism. There is significant room for increasing local revenues and enhancing the fiscal authority of LGIs. Their own revenues have not kept pace with broad based development and rising incomes across the country.

A study by Yunus and Rahman (2015) showed that public service users in the city corporations and municipalities were willing to pay higher property taxes and charges for essential services such as water, street lighting and solid waste management against a government commitment to provide uninterrupted services. These findings indicate the potential for higher revenue mobilization in the urban LGIs. The government's ADP allocation to LGD doubled in the 7th Plan but it fell short of the target allocation in each year. Moreover, the allocation was still low—1.2 percent of GDP in FY2020, up from one

per cent in FY2016. Budget allocation to City Corporations is much higher relative to LGIs on a per unit basis—there are eight city corporations compared with 4500 *union parishads* with over 75 per cent of the Bangladesh's population.

The government's approach to fiscal decentralization, in which it is building capacity of LGIs in PFM before launching major initiatives to achieve the former, may be justified on grounds that there are risks of revenue losses (moral hazard) and expenditure misallocation (adverse selection), hence its social inclusion and regional equity objectives may be frustrated due to the institutional weakness, and weak transparency and accountability. However, concentration of authority at the national level and the government's inclusive and sustainable development agenda going forward are not consistent. The country needs greater administrative and fiscal decentralization and the next Plan should address this issue with greater deliberation.

3.3 Economic Governance

3.3.1 Financial Institutions

Achieving Bangladesh's ambitious economic growth and social inclusion targets leading to higher middle income country status and beyond it, and emerging as a developed country cannot be achieved without significantly strengthening financial institutions—bank and non-banking, as well as capital market, which is the 'nerve centre' of the economy. High economic performance requires strong, well-capitalized banks and well-governed financial institutions. The financial sector reforms two decades ago achieved solid results—it strengthened corporate governance and the regulatory environment resulting in significantly better performing banks which supported Bangladesh's overall economic development in the period. However, a series of large frauds and rising non-performing assets in recent years exposed major erosion of regulation and corporate governance in the sector. While the performance of state-owned banks has been particularly weak, the performance of private banks, the non-banking financial institutions and the stock market also has been weak. Some of the most important issues in the financial sector concern the autonomy of Bangladesh Bank (BB) and substantial capacity building to enable it to function effectively as the regulator of the banking sector, and the related issue of rising non-performing loans (NPLs) of the banking sector, as well as of Bangladesh Bank. This section focuses only on the regulatory and corporate governance issues in financial sector.

3.3.1.1 Banking System

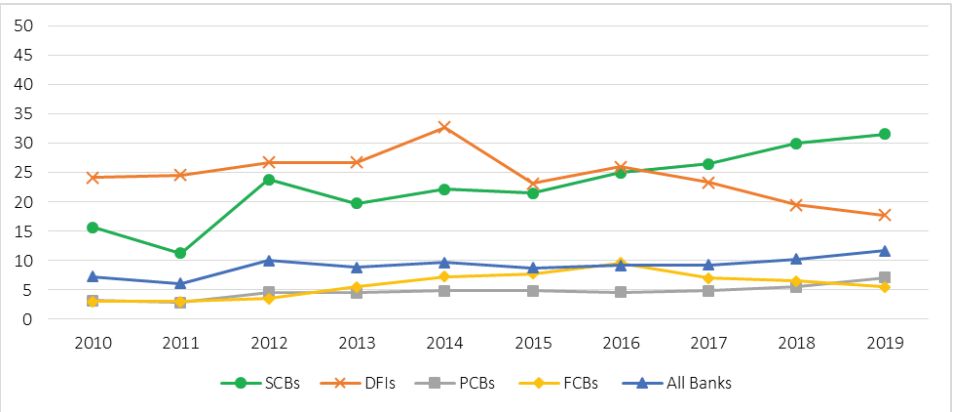
The banking sector evolved as one of the most vibrant sectors of the economy till a few years ago. The total assets of the banking system stood at BDT 15,470.9 billion at the end of FY 2019 compared with BDT 4855.1 billion in FY 2010 and BDT 2042.8 billion in FY 2005 (BB, 2019a), reflecting spectacular growth and increasing importance of the financial services sector in the economy. At end-June 2019, 68 per cent of the total assets of the banking sector were held by private commercial banks (PCBs) followed by state-owned commercial banks (SCBs) with 25 per cent, foreign commercial banks (FCBs) with 5 per cent and the state-owned development financial institutions (DFIs) with less than 2 percent (BB, 2019a; BB 2019b). Banking sector reforms in the 1990s strengthened the legal and regulatory framework, market-orientation of banks, management practices and allowed incorporation of private sector banks in the sector (IMF, 2011). However, the corporate governance standards and practices in the sector have deteriorated in recent years and as a

result systemic risks re-emerged and increased sharply. This, despite the strong emphasis placed on strengthening governance of the financial sector in the past decade.

The long standing issue of independence of the Bangladesh Bank (BB) remains at the centre of the present day banking sector concerns. Presently, The Board of Directors of SCBs is appointed by the Ministry of Finance (MoF) and in practice it weakens the supervisory role of BB. On the other hand, private commercial banks, foreign banks and non-banking financial institutions (NBFIs) are regulated and supervised by the Bangladesh Bank. The autonomy of BB is a long standing issue that needs to be addressed quickly to restore sound health of the banking sector. Moreover, the future reform agenda needs to strike the right balance between the 'keepers' of monetary policy (i.e. Bangladesh Bank) and 'keepers' of fiscal policy (MoF). This alone, however, will not be enough to make BB an effective regulator. Banking and financial practices are rapidly evolving and the central bank needs to keep abreast of the developments as well as increase its capacity to address emerging challenges. For example, the use of IT solutions, data analytics, changing mix of financial products and services, and new management practices pose capacity challenges for BB. It needs to develop capacity in these areas to strengthen its regulatory capability.

A consequence of weak regulation—sharp increase in the non-performing loans (NPLs) driven mainly by the rise in the NPLs of state owned commercial banks (SCBs), especially in the past five years—is depicted in Figure 6. The government target of keeping NPLs below 10 per cent since 2015 was exceeded.

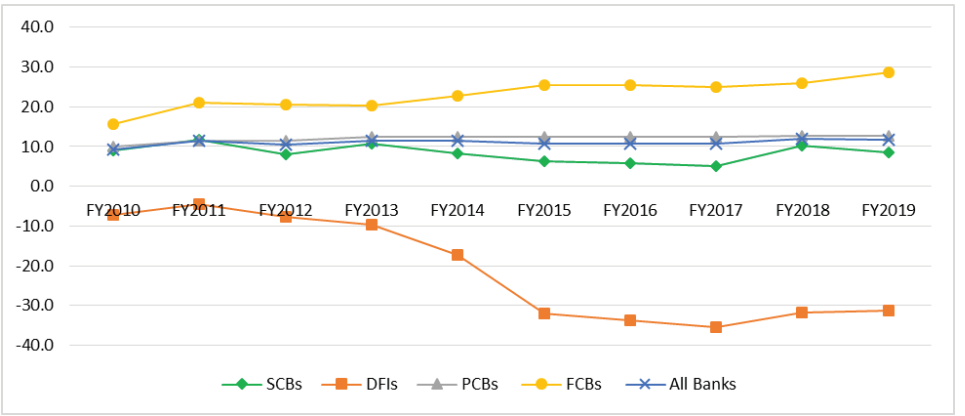
Figure 6: Share of Non-Performing Loans in Total Loans of All Banks



Source: Bangladesh Bank Annual Report 2018-2019

The Capital to Risk Weighted Asset Ratio (CRAR) is a more accurate measure of a bank's financial strength. It indicates a bank's ability to absorb losses and comply with mandatory capital requirements. Figure 7 shows that the CRAR for DFIs and SCBs are less than the minimum requirement of 10.5 per cent under the Basel III accord, and the DFIs have been chronically under-capitalized. The negative CRAR of the SCBs and DFIs reveal that these institutions were not in a position to cope with unexpected losses and in that event, will need capital injections, i.e. recapitalization sourced from budget transfers. The challenge for the banks will be greater in view of the economic impact of the COVID-19 pandemic, which has hit the banking sector hard in early 2020 and is continuing.

Figure 7: Capital to Risk Weighted Asset Ratio by Types of Banks



Source: Bangladesh Bank Annual Report 2018-2019

Since 2010 the government injected capital worth BDT 180 billion in the form of budget transfers to SCBs, of which BDT 88 billion was injected during the last five years, to shore up their capital adequacy to the minimum required level under Basel III. They received the transfers without requiring them to address their deeper problems ailing them. The provision of public funds to commercial entities despite their state ownership should be tied to stringent accountability mechanisms.

A recent survey of bank employees by the Bangladesh Institute of Bank Management (BIBM) shows that 61 per cent of bank employees perceive that violations of ethical conduct of the banks are increasing (Islam, Yesmin, Ezaz & Islam, 2019). At a time when the banks are increasingly digitizing their services, cyber-security and risk management have also become major threats. A cyber-attack on the central bank in 2016 exposed the risk of such attacks. A study by the BIBM showed that 62 per cent of the banks are vulnerable to the risk of cyber-attacks (BIBM. 2018).

Restoring sound governance of the banking sector, which is the source of an overwhelmingly large proportion of investment resources in the country and a major anchor of stability of the entire economy, through deep reforms must be a high priority and the government must do more to induce them to comply with Basel III's CAR requirements.

The non-banking financial institutions are also part of the banking system. Their total assets, however, account for a relatively small part, i.e., 5.5 per cent, of total banking assets. Their NPL ratio was 10.8 percent in 2019 and they were chronically under-capitalized (BB, 2019c). Bangladesh Bank stress tests showed that only four out of the 34 NBFIs were strong. These factors expose their weak corporate governance. While, BB suspended operations of two NBFIs in 2019, it needs to strengthen supervision and regulation of these institutions.

3.3.1.2 Capital Markets

The capital market can be a major source of equity and long-term debt finance for the private sector in particular. However, it has not benefitted from strong regulatory and related institutions. The stock market crash of the DSE in FY2011 revealed deep-seated

governance issues including weak capacity of Bangladesh Securities and Exchange Commission (BSEC)—the regulatory authority. Since then, the government implemented major reforms to strengthen corporate governance of the stock markets. The key reforms included separation of brokerage firms from the management of the DSE through the Exchanges Demutualization Act, 2013, but its implementation took several years. The Financial Reporting Council (FRC) under the Financial Reporting Act was established to strengthen accounting and auditing standards in the capital market. The FRC is also mandated to coordinate the regulatory activities of the three key public institutions—Bangladesh Bank, National Board of Revenue (NBR) and BSEC relating to the stock market. However, FRC has not yet been fully effective due to delay in preparing its governing rules and poor coordination with BB and NBR. The government also established the Special Capital Market Tribunal in 2015, but it handled only 25 cases transferred from the lower courts and the High Court in the last 18 months. The Bangladesh Securities and Exchange Commission has issued rules to guide capital market intermediaries in their exposure to risks, relating to capital adequacy. These are important reforms; however, their implementation has not been effective and has not restored confidence in the stock market—it is yet to revert to its pre-crisis levels and has not been able to attract foreign portfolio investment on a sustained basis.

Well-functioning capital markets need a highly skilled market regulator as well as high standards of corporate governance to ensure enforcement of rules, predictability of policy, transparency and accountability. Without such standards, attracting domestic and foreign capital will continue to be challenging. Bangladesh also needs to grow the bond market where secondary trade can take place, to establish a yield curve for interest rate and make it market-determined. Longer-term investment too cannot be financed without the bond market. Widening the base and deepening capital markets will play a critical role in Bangladesh's transition to an upper middle income country. It is not a sound option to continue the present excessive reliance on the banking sector to finance investments.

3.3.2 Tax Administration

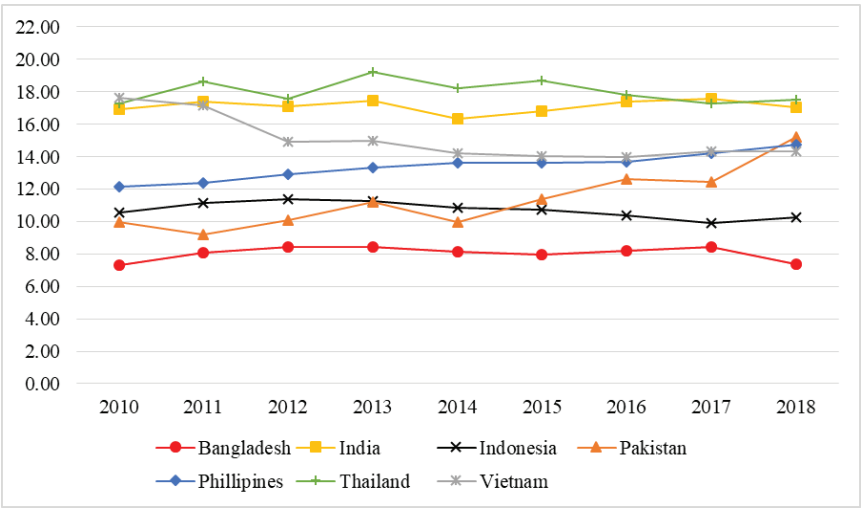
Taxation is one of the most important functions of the state in fulfilling its obligations to improve the well being of citizens. The policies used by the government to raise taxes and spend resources affects economic activity by altering the incentives for production, consumption, trade and other important economic activities. Government taxes and expenditure outlays proposed in the annual budget represent fiscal policy, which is a powerful instrument to promote economic growth and social development. In Bangladesh, the taxation authority is vested in the National Bureau of Revenue (NBR), under the Ministry of Finance. Notably, developing countries which successfully transitioned to upper middle income countries or progressed to become developed countries had high tax-GDP ratios, e.g. the OECD average was 34% in 2018, and for middle income countries it was 12% in 2017.[19] The tax-GDP ratio is also associated with higher governance scores and rankings. For Bangladesh, the tax-GDP ratio stood at 8.9% in both FY2019 (Actual) and FY2020 (Revised) (MoF, 2020). Taxes account for 85 per cent of total revenue and are Bangladesh's largest source of development financing. The low share of taxes in national income is one of Bangladesh's most important economic challenges and keeps it excessively dependent on bank borrowing to development expenditures. Increasing the tax-GDP ratio has been a long-standing objective of fiscal policy. However, the ratio remained stubbornly low

19 Figures obtained from OECD Data and World Development Indicators (WDI), which are available at https://data.oecd.org/tax/tax-revenue.htm and https://databank.worldbank.org/source/world-development-indicators, respectively.

reflecting structural and political economy concerns. Importantly, the tax-GDP ratio also reflects state effectiveness and as such needs to be addressed seriously.

Figure 8 shows the stagnation in Bangladesh's tax-GDP ratio. It also shows that the ratio for Bangladesh were the lowest relative to the other comparator countries.

Figure 8: Tax-GDP Ratio: Bangladesh and Selected Asian Countries



Sources: Taxes including social contributions data from ICTD/UNU-WIDER, 'Government Revenue Dataset', 2020. For Pakistan, data for 2016 to 2018 was obtained from World Revenue Longitudinal dataset, IMF as they were missing in the ICTD/UNU-WIDER database.

Table 2 shows that the tax-GDP ratio consistently fell short of government targets, in the last five years. The COVID-19 pandemic added to the challenge and kept the ratio below 10 per cent in FY2020.

Table 2: Total and Tax Revenue (Target and Actual)

Year	Total Revenue (% of GDP)		Tax revenue (% of GDP)	
	Target	Achieved	Target	Achieved
2015	10.8	9.6	9.3	8.5
2016	12.1	10	10.6	8.8
2017	13.5	11.2	11.5	9.8
2018	14.3	9.6	12.3	8.6
2019	15.1	12.5	13.1	11.4

Source: Bangladesh Bank 2019

The NBR took a number of steps to improve tax collection and broaden the tax base, such as incentives to submit income tax returns, surveys to identify new taxpayers, develop a database on nil return filers to enhance tax compliance, implement an alternative dispute resolution mechanism to reduce pending tax cases in the courts, set a stringent tax return submission deadline, hold annual 'tax fairs' in district towns, make submission of TINs mandatory for electricity bill payments, and expand field offices and tax appellate units.

These reforms had some positive effects. For example, the number of tax filings increased sharply—15.6 per cent per year and tax revenue growth was also strong. The government also used an ad hoc measure, which was allowing tax payers to legitimize their illicit earnings by paying a low tax. The long-awaited Value Added and Supplementary Duty Act, 2012 was passed in FY2019-20 as a 'watered down' version of the original Act. The Act involves rates differentiated by product at different stages of production and sale, making it more difficult to understand and implement than the original VAT Act, 1991, at least prima facie.

However these traditional measures did not alter the basic reality so far: Bangladesh's share of taxes in national income was the lowest among regional countries and among the lowest in the world. An experimental study on VAT compliance by SMEs in Dhaka city using social recognition norms showed that VAT payments increased by 6 per cent among firms who did not pay taxes (Chetty, Mobarak & Singhal, 2015). Another study showed that expanding the income tax net to cover 5 per cent of the population under the tax net would increase tax revenue by 3 percentage points of GDP (Khondker, 2019). In our assessment, property and wealth taxes can be a much larger source of direct tax revenue, but loopholes in the law and problems with the official property valuation guidelines seemed to encourage tax evasion. It has been suggested that measures to increase the coverage of corporate entities, including SMEs and rural enterprises, could carry large payoffs. It is important to monitor implementation of the VAT Act to assess its impact and amend it as necessary in the coming years (Mansur, 2019).

4. Advancing the Governance Agenda Under the 8th Five Year Plan

The seminal importance of governance institutions in development and well being was discussed in Section 2 above. It is worth recalling that while countries can increase incomes and even wealth rapidly, the gains in prosperity cannot be sustained over long periods without transforming their institutions. Based on its strong record of economic and social development in the past three decades, Bangladesh has set its sights on achieving upper middle income country status by 2031 and developed country status by 2041. The country must ensure that sound institutions and governance underpin its future development. Thus consolidating the gains of democracy, advancing the rule of law, nurturing social values to improve bureaucratic effectiveness and improving economic institutions assume much greater importance than in the past. This section suggests measures in these areas which should be prioritized in the 8th Five Year Plan (2020-2025). These are onerous tasks and as the development experience elsewhere shows, their realization requires deep political commitment. Effective coordination and collaboration between all agencies of the government as well as other stakeholders from the grassroots to the national level will be also required. In particular, the active engagement of civil society organizations, which played a vital role in the country's impressive success in reducing poverty and enhancing social development so far, as well as collaboration with the private sector, will be important in achieving success in governance reforms.

The introduction of a results-based monitoring system in the past decade was a significant step towards achieving planning targets and improving outcomes. Achieving desired outcomes and impacts, however, will require evaluations by third parties, of the 8th Plan's strategies, programmes and activities aimed at improving governance and strengthening institutions periodically to learn lessons, take corrective actions and inform future

measures and policies. The country has been hit hard by the COVID-19 pandemic which exposed major institutional weaknesses especially in the health sector. These will have to be addressed as a matter of priority in the 8th Plan. Given the uncertain impact of the pandemic at this stage, the measures suggested below do not include reform of the health institutions. Planning and public policy, going forward, should be more data-driven in the age of 'big data' in which data and evidence are becoming increasingly embedded in government decision-making. This all the more important as the next decade will usher the developing world into the 'Fourth Industrial Revolution.' The need to improve the quantity and quality of government statistics, and access to the data was never greater. The assessment in Section 2 above showed that many measures were implemented but several others could not be achieved in the past. Many of them are included in the measures suggested below and new ones added to the agenda of institutional strengthening in the 8th Five Year Plan.

4.1 The Rule of Law

4.1.1 Parliament

The parliament embodies the sovereignty of the people and hence lies at the 'heart' of a vibrant democracy. Bangladesh's impressive progress took place under democracy. It is thus important to consolidate its gains and strengthen the democratic process as the country strives towards achieving a pluralistic, equitable and just society. Parliament impacts economic and social progress in important ways. In their legislative role, members of parliament frame laws to protect public interest and further economic and social progress, while in their representative role, they further development and progress of their constituencies. Parliamentary representation has made development more broad based and inclusive. Vibrant democracies need a strong opposition to ensure that the people's views are fully represented and debated. Parliaments also play a crucial role in nurturing future political leaders.

The parliament needs to play its legislative role continuously to frame new laws and amend existing ones to reflect changing realities of the country. The laws relating to property, especially land and intellectual property; and improve the investment environment, the role of law enforcement agencies, and protection of the environment and climate change in particular need to be revisited to assess their relevance in supporting the country's strategic development goals. Under the 8th Plan, parliament should include measures to increase the representation of women above the present limited reserved allocation, keeping in view the share of women in the population and the specific nature of the challenges they face.. Advancement and equality of women cannot be achieved nor can violence against women be eliminated without their participation in framing laws to guarantee these objectives. Parliament should also hold regular hearing on issues of public interest such as environmental degradation, money laundering, banking sector concerns, serious irregularities in health and education, etc., in their role of acting to check abuse of authority by public officials and agencies.

4.1.2 Judiciary

Justice institutions protect the civil liberties and fundamental principles of the law. As such they protect human rights, property rights and security of contracts, and interpret laws vital to economic institutions such as markets and commercial enterprise. Developed and higher

income economies are distinguished by strong, efficient and effective judicial systems. As Bangladesh progresses towards the upper end of the middle income country spectrum, it is all the more important that it fosters an independent judiciary also to strengthen market institutions. As the custodian of fundamental rights, the judiciary protects labour rights, including safe working conditions and trade union rights; property rights; corporate rights; etc. which form the core of market economies.

The justice institutions at present are marked by uneven quality of judicial services, slow dispensation of justice and complex laws. These issues will need serious attention over the next decade. The priority measures suggested to be implemented over the medium-term, i.e., in the 8th Plan, are to reduce the backlog of cases in the formal court system by streamlining procedures, recruiting more judges, developing their capacity and increasing financial resources to achieve this; expedite approval by parliament of standardized criteria for the recruitment of judges in consultation with the Supreme Court; and include specific indicators of accountability and integrity of judges and court officials in their performance assessment for use in career progression.

The semi-formal and informal institutions are important innovations and have increased access to justice and need to be expanded and strengthened. In cases arbitrated by the Village Courts, they may only award compensation payments of up to BDT 75,000, which limits the number of cases they can settle because most cases relate to land where valuations are much higher. Increasing the ceiling to BDT 150,000 from the present level will increase the number of cases they can take up. The ceiling should be reviewed every three years and increased if necessary. The capacity of the Village Courts should also be strengthened by enhancing the skills of the court assistants. In addition, the legal advisory services of NLASOs should be scaled up by increasing their staff size and skills. They should be required as well to collect and post accurate data on the number of cases considered and settled under the ADR mechanism on a government designated website to increase transparency.

The judiciary, as noted above, protects property rights, labour rights, corporate rights, etc. While it must play its role in dispensing justice and disposing of cases quickly and impartially, the onus of implementing verdicts lies with the public administration and law enforcement agencies. A particular challenge in this regard centres on land transactions and ownership. These three institutions need to strengthen collaboration in this regard.

4.1.3 Gender Equality

Bangladesh has improved its record on gender equality in the last 30 years; however, as noted in Section 3, many challenges remain in this area. Bangladesh was ranked as 129th out of 162 economies in the Gender Inequality Index 2019, published by UNDP. The measures proposed in this subsection include eliminating gender violence, as it falls within the overall rubric of SDG 16. It is a deep-seated social predicament and requires legal reforms, strong law enforcement, community support and behavioural changes, such as 'nudges' (Thaler & Sunstein, 2009), as well as technology-based solutions.

Specific measures suggested are to: review laws concerning women's rights to assess their consistency with provisions in the Constitution. Where they are inconsistent, measures should be taken to amend such laws or legal provisions. The changes involved may require broad political support and mobilization. It is essential to get the legal framework right

to protect women and children against violent crime and achieve gender equality. Law enforcement agencies, especially the police, should be required to undergo specialized training to handle female victims of violence and to change their traditional 'mind set' towards women. Their performance assessments should include specific indicators in this regard. Both good practice examples in preventing such crimes and swift actions to bring instances of crime to law courts should be rewarded.

In tandem with formal law enforcement agencies, the capacity of frontline service providers to deliver prompt online and in-person services should be significantly enhanced. The MSP-VAW is an important initiative but still a small step to address such a deep-rooted and widespread practice in society. The NLASOs should be encouraged to focus more on violence against women and children as a top priority. The One-Stop Crisis Centres and One-Stop Crisis Cells (OCCs) should be made operational throughout the country. The NLASOs should work in close partnership with NGOs and community support groups to provide legal and counselling services to the victims, and empower victims to take legal action against offenders. The tripartite partnership should raise public awareness about the NLASOs, the OCCs and the national hotline. As a short-term measure under the plan, the government should extend targeted financial assistance to female victims of violence during the COVID-19 pandemic. Innovative means such as social media (e.g. Facebook and Instagram) as platforms to disseminate domestic violence-related information should be used.

4.1.4 Corruption

The performance on combating corruption takes some of the 'shine' out of the otherwise well-heralded 'Bangladesh development story.' The measures taken so far have not yielded desired results. Combating this 'public bad' requires a more concerted 'whole of government' approach in which public institutions must collaborate more effectively among themselves but also be joined by private and civil society institutions. While, a single institution as such can play an effective role, a broader approach is necessary. Public awareness about the RTI and greater responsiveness of public institutions to filings should be encouraged in the 8th Plan. The government should also enact a 'Whistle Blower's Act' to protect complainants, and address corruption and fraud. The ACC should be empowered to function as an independent institution and report directly to the head of state, by amending legal provisions in ACC Act, if necessary. Changes in the legal provisions are also needed to enable ACC to track the assets of public representatives and senior officials.

Empowering the ACC should be accompanied by capacity development and requirements to increase its transparency and accountability. ACC needs to develop capacity in preventive and investigative anti-corruption methods, including usage of 'nudge' methods to change behaviour and attitudes. It also needs to improve the skills mix of officials, and greater financial and logistical support as well as digitization of operations. The government should reward good and innovative anti-corruption practices in public institutions at the national and local levels. Learning from other middle income countries which have improved performance over the past decade should be a routine process. The ACC and the government should also take measures to enable recruitment of technocrats from outside the government to lead and work in the ACC to increase its effectiveness.

4.1.5 Public Expenditure Oversight

The Office of the Comptroller and Auditor General of Bangladesh (OCAG), a constitutionally mandated institution, is responsible for auditing and reporting on the accounts of all public institutions including the courts of law. However, its ability to function independently is constrained by weak capacity and financial resources. It needs capacity development to improve the quality and timeliness of audit reports. It needs to improve transparency by placing up to date audit reports and related information on its website—the latest year for which information is available on their website is FY2017 (OCAG, 2020). It should also provide audit reports of the ministries to the Public Accounts Committee (PAC) of the Parliament in a timely manner. The latter should invite advice from specialist professionals from outside the government to support and inform its work. The PAC should take steps to open its proceedings to the public. These measures will significantly contribute to strengthening governance. The government and OCAG should take measures to enable recruitment of technocrats from outside the government to lead and work in the latter to increase the OCAG's effectiveness.

4.1.6 Right to Information

The RTI is implemented by the Information Commission. Considering that RTI is a fundamental right and powerful instrument to promote accountability of public institutions, it is essential that the IC functions effectively. It should strengthen monitoring and be responsive to public requests for information. This will increase the transparency of its work. The IC started online tracking of RTI applications on a test basis but this should be made operational at scale to increase its responsiveness, and place data on the requests, filings and actions taken on requests for information, in the public domain and update them regularly. The IC and the government should take measures to enable recruitment of technocrats from outside the government to lead and work in specialized areas to increase the IC's effectiveness.

4.2 The Bureaucracy

Civil service reform since the 1980s centred on strengthening the principles of the Weberian model—meritocracy, impartiality and professionalism—in the bureaucracy while adding aspects and practices of more recent models of public administration along the way.[20] In practice, however, vestiges of traditional practices and attitudes remained in the public administration system. Since then, public administration have evolved through a succession of paradigms—the most recent of them being a class of hybrid models incorporating features of several models (Lampropoulou & Oikinonou, 2018). While ruling governments in democracies serve only for a fixed term after which they must seek re-election and leave office should they lose, the bureaucracy, on the other hand, is a permanent institution and as such, has the most knowledge of the rules, conventions and procedures by which public institutions are governed and how these evolved over time. It is thus effectively the 'trustee' of the state.

In the current governance context in Bangladesh and looking to the next decade, the administrative system should be more focused on 'social values' to advance the greater good of society. These would include, putting the public interest ahead of private interest or group interest, i.e., 'voluntarism,' integrity, ethics, empathy, compassion, social

20 See Weber (1946).

justice, broad based consultation and collaboration with all stakeholders, etc. and be strongly embedded in the culture of their work. This approach would use the institutions of representative democracy from the grassroots to the national level more effectively to include the poor, vulnerable and marginalized, and increase public support for governance initiatives. It would also ensure greater transparency and accountability. These ideas reflect features of the hybrid models of public administration alluded to above, especially those of the Public Value paradigm. The challenge for the political leadership going forward will be to nurture such a bureaucracy. While institutions carry the possibility of change within them, in reality change depends on the relative effectiveness of the elected government and the bureaucracy (Mahoney & Thelen, 2010). A degree of 'constructive tension' between the political leadership and the bureaucracy is nevertheless a pre-requisite—a necessary internal check and balance—to prevent abuse of authority by both institutions. This is essential to achieving good governance.

The government implemented several systems to improve financial and investment management. As noted in Section 3, PFM aligns public expenditures to the available resource envelope by using tools such as the financial information management systems and the IBAS++. PIM permits better management of public investment and MTBF provides a medium-term horizon in preparing the annual budget. These are interrelated systems and tools significantly contributed to improving financial planning and fiscal discipline. The PFM, PIM and MTBF, however, need to be implemented across all ministries and public departments to institutionalize the culture of planning and fiscal discipline. This should receive high priority in the 8th Plan.

The Medium-Term Debt Management Strategy (MTDS) of the government should be made public as it is concerned with intergenerational equity. Transparency of the budget needs further significant improvement. An important measure in this regard is to make a pre-budget statement available for wider public debate ahead of the budget's presentation in parliament. In addition, it should publish the citizen's budget and district budgets every year. The utilization and management of public resources must be handled with utmost transparency, and public officials should be encouraged to respond to RTI requests or complaints in this regard.

The Ministry of Public Administration and the Cabinet Division should prepare medium-term capacity development plans, in consultation with other relevant ministries and agencies to address the challenge of upgrading knowledge and skills required to their critical role in supporting the transition of Bangladesh to a well-governed country as it attains higher levels of material well being. The overarching aim of such plans should be to help public officials imbibe the 'social values' as a means to improving governance in line with the next long-term plan of the country. The capacity development plan should help to keep the bureaucracy abreast of the most recent developments in public administrative paradigms. A forward-looking bureaucracy must also be skilled in the use of technology as well as data- and evidence-driven decision making. The plans should particularly target women to develop their capacity to progress to senior positions in government administration. Sustaining the representation of women in higher positions also requires that more women qualify for the civil services every year, and are well represented at junior- and mid-levels of administration. Further more incentives should be provided to increase completion rates of women at the tertiary and secondary school education levels.

The government should promote innovation in the administrative decision-making processes and implementation of development projects and programmes. In developing such capacity, the BPATC and JICA collaborated on introducing the 'Kaizen' model of innovation in public administration. The government should consider extending the training to mid-career and senior civil servants. Innovations which lead to good governance practices should be recorded in the APAs and rewarded. However, transparency in the criteria used to recognize and reward public officials should be ensured, since its can affect career progression and morale (Zaman, 2020).

As discussed in Section 3, the government implemented a wide range of digitization initiatives in public institutions to standardize the digital systems used in the ministries and departments under them to streamline work flows, such as e-filing, e-procurement, etc., in government as well as to improve connectivity with local government institutions. The government also significantly increased the number of public services available to the public. This was accompanied with training to increase digital literacy of public officials. These initiatives were timely and marked a significant step towards e-government. They however need to be made more effective, while increasing the number of e-services available to citizens. Further expansion should be preceded by wider public consultations to identify public needs.

The government's e-procurement system expanded rapidly in recent years and should continue to expand to include all public procurement by the end of the 8th Plan. In addition, the upstream part of the e-procurement process (e.g., bid evaluation stage) should also be included in the existing social accountability mechanism to reduce corruption risks and increase public confidence in the public procurement process.

4.2.1 Land Management

Land is the most important source of wealth for the larger segment of the population, and, as a land-scarce country, it is also the largest source of dispute and conflict in Bangladesh. As such transactions in land and development of a more efficient land market—a critically important institution in developed countries—are very complex. While parliament needs to address issues relating to reforming land laws and the legal framework for improving the land market, the ministries involved with land management need to do their part to improve existing systems, processes and practices to improve clarity and security of land ownership, tenure and contracts to create a more enabling environment for investors and deliver land-related services to the public. This will reduce the costs of doing business for firms and receiving services for citizens.

The digitization of land records such as cadastral surveys, land registration records and record of titles plus *khazna* records assumes greater importance in this context. The digitization initiative should be reviewed to ensure the interoperability across the Ministry of Land, the Ministry of Law, Justice and Parliamentary Affairs, and their relevant department and field offices. The development of the Land Information Service Framework (LISF) which aims to boost internal communication and coordination under a single digital dashboard should be prioritized. Private sector and citizen satisfaction with the land-related e-services, including e-mutation, should be assessed periodically by third parties and the feedback should be incorporated into further implementation of the initiatives. The inclusion of e-services in future expansion of e-government initiatives should be based on wider consultations and partnerships with stakeholders. Another important medium-term

outcome of the digitization initiatives should be the reduction of the number of land-related court cases and land disputes.

The e-mutation service currently includes online application for mutation records. The uptake of the service especially in rural areas is still very low. The government needs to increase public awareness of the service and promote digital literacy campaigns in collaboration with the private sector and civil society. Together with the digitization of land records mentioned in the preceding measure, reducing the completion time needed for land mutation, following a change of ownership titles due to sale or inheritance, through the e-mutation service will contribute to removing a major constraint towards the improvement of the local land market. The Ministry of Land, the Ministry of Law, Justice and Parliamentary Affairs, and their relevant department and field offices need substantial capacity development to modernize land management systems and practices. The offices of Assistant Commissioner (Land) and Sub-Registrar of Land deserve particular attention in this regard. These offices rely on archaic manual systems which increase corruption risks.

4.2.2 Decentralization

Concentration of administrative and fiscal authority at the national level in a country of 163 million people makes it more difficult to achieve the government's long-term development objectives. A more decentralized administrative system along with devolved fiscal responsibilities is necessary to achieve higher economic growth, inclusive development and regional equity apart from elimination of poverty. While sequencing capacity development of LGIs ahead to fiscal decentralization was an appropriate strategy till now, it is time to increase the pace of decentralization—both administrative and fiscal. However, some important issues need to be prioritized in the 8th Plan. The Local Government Act, 2009 and the model tax schedule need to be reviewed to eliminate inconsistencies with the *upazila* model tax schedule. Further, the government should revise the current mechanism for transferring resources to LGIs to make the transfers more predictable, by giving more weight to transparent economic and social development indicators. The better-off LGIs should be gradually weaned away from heavy reliance on government transfers. Local resource mobilization can be enhanced significantly by revising the existing property tax assessment system. The government should also establish a Local Government Finance Commission with the task of managing fiscal transfers to LGIs as well as monitoring the revenue performance of LGIs. The proposed Commission will work closely with the field administration.

The government should also introduce the IBAS++ in the LGIs and ULBs to improve revenue and expenditure management. Posting and updating the income and expenditure statements on their websites, and linking them to LGD's website to increase accountability and transparency of LGI operations should be made mandatory. The objectives of decentralization, however, cannot be achieved without continuing to strengthen the capacity of LGIs. The capacity development under LGSP III and of the urban local bodies should continue, and be updated not only through consultations with field offices but also with other stakeholders.

The APA system worked well in helping to focus the attention of public officials on setting goals and achieving targeted outputs. Such performance orientation is essential in making the bureaucracy more effective. The system should be continued and indicators relating to demonstration of integrity under the NIS and 'social values' noted above, protection of

gender and child rights, actions to serve the poor and marginalized groups, protection of the environment and sustainable development, innovation and e-government competencies should be included in the APAs going forward. The APAs should however be effectively used as the basis for career progression in the civil service.

The Public Service Commission plays a critical role in ensuring the quality of public servants. The government should include specific measures to strengthen its effectiveness in carrying out its functions, especially to protect the integrity of the merit based recruitment system for public officials

4.3 Economic Institutions

The national political consensus on the role of markets in economic development in 1991 paved the way for major reforms, which steadily increased the economic growth rate and reduced poverty without exacerbating inequality for the next two decades. The private sector emerging as the linchpin of economic growth, macroeconomic management along with price stability and increasing strength of the financial sector were high-water marks of this period. The last decade witnessed another upswing in economic growth and per capita income, elevating Bangladesh to a lower middle income country in 2015. However, while poverty continued to decline its pace slowed, the share of private investment in GDP stagnated and inequality increased. At a time when the governance standards of regulatory institutions needed to be upgraded to underpin the growth acceleration, weaknesses in critical institutions of finance and resource mobilization were exposed. This section suggests measures which should be given high priority to strengthen three key economic institutions, i.e., the Bangladesh Bank, The Bangladesh Securities and Exchange Commission and the National Board of Revenue. These institutions, as noted in Section 3, are vital to the day-to-day functioning of the economy as a whole. The measures are aimed at institutional strengthening and do not address macroeconomic policy concerns, except as outcomes of institutional reform.

4.3.1 Bangladesh Bank

The Bangladesh Bank is not only the apex regulatory entity of the banking system but also plays an important role in the capital market. Apart from its role in framing monetary policy to support economic growth and inflation, it also supports the prevention of illegal practices such as smuggling, money laundering, tax evasion, etc.

The 8th Plan should give top priority to empowering Bangladesh Bank to carry out its legal mandate—the regulation and supervision of all banks—without encumbrance. It needs to function independently to steer the banking system out of its present predicaments, the most concerning of which are the high non-performing assets of the banking system and the non-banking financial institutions. The heightened systemic risks in the sector in recent years should not be allowed to persist. In its supervisory role, Bangladesh Bank should target not only on the NPLs but also on compliance of all banks with the capital adequacy ratios of the Basel III accord.

The Bangladesh Bank also needs to be more effective in the monitoring and supervision of the NBFIs, most of which are chronically undercapitalized. It should consider advising the government on stronger measures such as mergers, acquisitions, debt-equity swaps, etc. which will require changes in the legal framework.

Government measures taken to increase lending to sectors and entities hard hit by the COVID-19 pandemic were necessary, in view of the weakened macroeconomic outlook. More support may be needed if the adverse effects linger. This may put additional pressure on the banking system. It will be all the more important for Bangladesh Bank to play its regulatory and supervisory role with greater vigilance to maintain monetary discipline in the banking system.

The budget transfers to recapitalize under-performing state-owned banks were temporary measures and in future must be linked to stringent performance criteria requiring the recipient banks to reform their operations and become solvent. The criteria should be part of a tripartite agreement between the Ministry of Finance, Bangladesh Bank and the recipient banks, and Bangladesh Bank should be empowered to monitor their performance and take corrective actions as needed. Information on capital injections to individual banks, along with the reform program agreed between the government and the recipient banks, should be made available in the public domain on a full disclosure basis to justify the use of public monies.

The Bangladesh Bank should implement a single deposit insurance scheme to cover all banks by amending the Deposit Protection Act, 2020, if necessary.

4.3.2 The Bangladesh Securities and Exchange Commission

The coordination among regulatory authorities, such as Bangladesh Bank and Bangladesh Securities and Exchange Commission (BSEC) needs to be improved to enhance governance in the capital market. The rules of the Financial Reporting Council (FRC) need to be drafted and made fully operational to enable it to effectively oversee accounting and auditing standards in the capital market, and coordinate the activities of BSEC, the Bangladesh Bank and the NBR relevant to the stock market. BSEC also needs to ensure accountability by imposing financial penalties when companies fail to comply with the financial disclosure rules. It also needs to ensure that the special tribunal on capital market is functioning, i.e., receiving and disposing the stock market-related cases from the court system.

Strengthening BSEC as a regulator will be critical in developing a vibrant market for stocks and bonds, including a secondary market for the latter. Such equity and debt markets facilitate mobilization of capital for investment especially much needed long-term investment, to finance industrialization and infrastructure projects. It will also help to attract foreign direct investment. Well-performing equity and debt markets also reduce dependence on the banking sector for financing investment. The payoffs of effective regulation by BSEC are thus very high.

4.3.3 The National Board of Revenue

The NBR needs fundamental reform to change its management model and practices to overcome its weak tax performance. Lessons learned from past and recent developments in tax administration in other successful countries should be considered in guiding future reform. The experience of developed countries and MICs which achieved higher tax-GDP ratios suggests that tax evasion tends to decline with improved public service delivery. NBR should therefore closely coordinate and collaborate with other government ministries and public sector agencies, as well as with private sector and civil society, to improve

tax collection. Taxation is a powerful tool to improve social equity and reduce income inequality. Hence improved performance of NBR will also contribute to these vital development objectives of the government. Implementing the online payment systems for all taxes, including the VAT—the largest source of revenue, should be a top priority. NBR is developing an online platform—National Single Window—to facilitate trade and commerce which should also be prioritized. It is also automating the bonded warehouse licensing system. This should be ensured in the first year of the 8th Plan.

Tax reforms should include simplification of all taxes—income tax and VAT law, as well as customs tariffs. Complex methods of assessments, exemptions, frequent changes via SROs and multiple rates of VAT (The Value Added and Supplementary Duty, Act 2012) create loopholes which can encourage evasion and corruption. The tax system as a whole needs to be streamlined, and while continuing to broaden the tax base, new innovative approaches such as social recognition and 'nudging' should be piloted to improve the behaviour and attitudes of tax officials and taxpayers.

4.4 Other Areas of Institutional Reform

4.4.1 Sustainable Development

The government's commitment to sustainable development under the 8th Plan will depend on the performance of its institutions. The institutions related to protecting land, water, forests, wild life, etc. have not been effective in protecting the environment and natural resources, and exposed weak governance. Bangladesh is also among the few countries most vulnerable to the adversities of climate change. It ranked as 98th out of 180 countries in the Global Climate Risk Index 2020 (Eckstein, Künzel, Schäfer, & Winges, 2019). In 2019, the country ranked 116th out of 162 in the SDG Index published by UN Sustainable Development Solutions Network. The government needs to strengthen its resolve to reform the effectiveness of these institutions under the 8th Plan. Specific indicators should be included in the results matrix, closely tracked and implemented during the Plan period.

4.4.2 Youth Programmes

Bangladesh has a very large population in the 18-35 age group. This presents both an opportunity and a major challenge. The former because the government can benefit from it—reap a large demographic dividend, and the latter if the opportunity is missed youth unemployment will remain high turning into a 'demographic curse' instead. High youth unemployment is a feature of the 'middle income trap.' High youth unemployment can pose serious governance challenges in the form of rising crime, violence and drug addiction. The 8th Plan will be an opportunity to take measures to increase youth employment. In general growth acceleration in all economic sectors will increase employment including employment of the youth. A broad based partnership between the public, private and civil society institutions should work in a coordinated way to develop the capacity of the youth and provide them with 'employable skills' guided by the labour market. Skills to promote self employment of the youth especially in the emerging IT industry should be prioritised.

4.4.3 Data-Driven Decision Making and Implementation

There is a general scarcity of data on the activities and services of government institutions. Available information and data are also not updated regularly. Moreover, the data provided in government websites are not always presented in user-friendly formats and often indicate inaccuracies. Availability of accurate data and information should be given top priority not only to improve transparency, but also to enable independent evaluation of government strategies, policies, activities, functions, etc., and improve government effectiveness and development results. This is particularly important for Bangladesh as it enters the mainstream of the Fourth Industrial Revolution—the age of rapid technological change and 'big data.'

5. Concluding Remarks

Governance institutions matter. Development performance includes it when underpinned by sound institutions and good governance. Institutional reform is a long process and faces resistance from inertial factors and vested interest. These can be overcome by strong, high-level political commitment sustained over a long period. Local contexts are important, so lessons from the past and good practices within public institutions of the country are relevant for the design and implementation of development plans. The democratic institutions (parliament and judiciary) and the bureaucracy must improve coordination and collaboration to improve implementation and achieve outcomes. This also requires broad-based consultations with other stakeholders, i.e. private sector, civil society and the wider public. International experience indicates that an incremental approach to reforming and restructuring governance institutions rather than sweeping changes is a more realistic strategy to achieving good governance. Organizational and enforcement capacity need to be prioritized and good practices in these areas rewarded.

A key challenge for the country's planners and policy makers in the 8th Plan will be to achieve a better balance in resource allocation between the growth sectors and the institutions of governance. It is also important to state here that the social sectors (health, education and social protection), and environment and climate change also depend critically on good governance. Moreover, the country's performance in these sectors will determine the achievement of the SDG's. The COVID-19 pandemic and the increasing effects of climate change and environmental degradation pose serious risks to the large segments of the population. Underfunded public institutions especially in this context will weaken governance institutions. In ending it is important to remember that Bangladesh's governance challenges are formidable (as reflected in the indicators and indexes discussed in Section 2) and need to be addressed with much greater deliberation to sustain the gains of development achieved so far and achieve the country's long term aspirations for the well being of the common people.

The achievement of targeted outputs, outcomes and impacts in development plans depend on adequate allocation of resources as well as effective implementation. A review of sector allocations in the 7th Plan shows that they sell short of targeted amounts, in many cases there were large shortfalls. The government must ensure that adequate resources are allocated to achieve the targets of the 8th Plan. It should be used as a measure of the government's commitment to its long-term development objectives.

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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)
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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)
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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)
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38	Millennium Development Goals: Bangladesh Progress Report 2013 (August 2014).
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