

Labor Market Study for Skills (LMS- SEIP) – Core Team & Components 1,2,4,5

Executive Summaries of Core Team and Components: 1,2,4,5.

Macro-economic Outlook for Bangladesh over 2020 and 2035

Introduction

Bangladesh, being one of the fastest-growing economies in the world, is ranked 41st in terms of GDP size and is looking forward to graduating to an 'Upper-middle income country' by 2031 and a developed country by 2041. Throughout this period, the nation has seen significant improvements in some of the major macroeconomic indicators. The poverty rate was reduced to 20.5 per cent in FY19. The per capita income grew to US\$2824 and social safety net programmes expanded their coverages on old-age and mother and child allowances. In 2020, the infant mortality rate reduced notably and currently the life expectancy on average is 72.8 years. The 8th FYP was announced in 2020 following the success of the 7th FYP. However, in early 2020, the Government of Bangladesh was quite optimistic that this upward trend of these indicators will continue to have another great year – with respect to growth and poverty reduction. But the optimism was seriously dented by the severe onslaught of COVID-19. It had virtually stalled all economic activities all over the world.

The COVID-19 outbreak had inflicted dramatic global impacts on trade, production, and other economic activities. It imposed substantial impacts on the Bangladesh economy. During the first wave and the first nationwide lockdown situation, economic growth in Bangladesh was also severely interrupted. Estimates of the World Bank and IMF project 1.6 per cent and 3.8 per cent GDP growth rates for 2020. Bangladesh was exposed as it relies on a narrow economic base (comprising garments/textile, agriculture, construction, and foreign remittance earnings) and is a moderately open economy (exports and imports together account for around 30% of GDP). There was a decline in demands in both the local markets and in the export markets as there was an increase in layoffs of jobs while the overall income declined. On the supply side, like many countries in the World, Bangladesh is highly reliant on China for raw material inputs for its economic activities including garments and textiles. Furthermore, capital inflows from China are key to various sectors, particularly in the construction sector. Also, Bangladesh's higher value-added exports are concentrated in countries in Europe and the USA, which were one of the biggest epicentres of the pandemic during that time.

Right after the first hit of the pandemic, the economy slowly started to recover and achieved a nominal GDP of over BDT 35 million during the fiscal year 2020-21. Despite the economic impacts of the pandemic, the real GDP growth for FY2020-21 reached 6.94%. The inflation rate was at 5.56% during that time. Only 0.13% of the gross investments made in the economy accounted for Foreign Direct Investment (FDI), which was lower than the previous year. The net exports of goods and services made

that year were at -6.40%. On the supply side, the manufacturing and service sectors bounced back with the help of the government's fiscal and monetary stimulus packages. On the demand side, the export markets and consumption picked up to stimulate growth in the economy. The remittance inflows experienced major fluctuations during this period as many of the migrant workers were not able to return to their jobs abroad.

However, the exchange rate increased to 84.81 in FY2020-21, and it keeps hiking up each day till today, which is a nationwide concern right now in the economy of Bangladesh. However, this inflationary pressure and a current account deficit are now further triggered by the ongoing Russia-Ukraine conflict. Even though the Bangladesh economy was making strong progress in the recovery phase of the pandemic, this new conflict already reversed it back in certain cases. As global prices are on the rise, especially for food and energy, it is generating severe inflation in the national economy which is likely to increase the poverty rate again. This ongoing dispute is inducing some critical challenges in Bangladesh as a whole. Therefore, Bangladesh needs to take up some adequate strategies to recover from this new turmoil.

Moreover, we need to recognize at the outset, that a set of pre-existing socio-economic vulnerabilities in the Bangladesh context, would exacerbate the welfare and distributional impacts of the gathering crisis. These include clustering around the poverty line and the potential for large increases in the poverty headcount; high levels of household indebtedness; and weak channels of social protection.

The prime objective of this exercise is to project macroeconomic outlooks over the 2020 to 2035 period. It aims to project outlooks for the following key indicators:

- GDP and its growth
- Investment and I/Y ratio and including a breakdown of investment for the education and TVET sector
- Employment and unemployment

The paper used a simple macroeconomic framework that consists of five accounts: (i) real side; (ii) fiscal; (iii) money and credit; (iv) balance of payment; and (v) poverty and distribution. In addition to these blocks, a debt block is appended to capture debt dynamics.

Skill Gap in the Furniture Sector of Bangladesh

Executive Summary

Furniture is a rising industry in Bangladesh, as domestic and foreign demand has increased in recent decades as a result of official and corporate use of furniture. Furthermore, domestic consumers' purchasing power has expanded as a result of economic expansion. The rapid growth of this industry is driven by the rising demand for furniture from both domestic and international markets. The limited

labour supply and shortage of skilled personnel, however, make it difficult to realize the full potential of this sector. To overcome this hurdle, the productivity of the labour force must be improved through effective education and skill development in order for the country's future progress to be achievable. This necessitates a thorough analysis of demand and supply, as well as the current state of the skill, in formulating a strategy for skill development over the medium and long term. This study explains the future labour supply-demand gap, as well as the training required in the number of employed people to achieve higher growth in this industry, as well as demand and supply projections for 2035. It provides estimates of training targets to be considered under SEIP.

The purpose of this study is to project future labour supply and demand in the furniture industry, as well as the number of people who will need to be trained. The paper is qualitative in nature, and there isn't much scope for quantitative analysis in this paper. However, the paper primarily uses secondary analysis in a few cases, namely the 2016-17 labour force survey. The analysis of how much labour would be employed by 2035 assuming the current pattern of value addition in the manufacturing sector continues is used to make the labour supply projection. According to the forecast, labour employment in the furniture business will double by 2035, compared to the 2016-17 LFS figure. The labour need is forecasted using data from key informant interviews (KIIs) and the Bangladesh Furniture Industries Owners Association (BFIOA). The furniture sector has unmet demand; qualitative responders suggest that if the industry could meet the unmet demand of labour, it might grow at a rate of 10 per cent per year on average. As a result, there is an average 3.5 per cent supply and demand mismatch in the furniture industry, which will persist until 2035 if effective labour supply measures are not taken. Additionally, if we project the data based on the growth of value addition elasticity of employment, which is 28% in 2013 to 2016-17 LFS, the labour demand coincides with the demand satisfied under the meeting "unmet demand."

Along with the unmet demand in the furniture industry, there is a skill gap, a lack of female employment, and a low number of people who have received training in this field. Based on the qualitative responses in this study, a training projection is provided for this sector. Despite the fact that the furniture industry is mainly informal in character, providing training to them would be less effective. Thus, formal furniture industry workers should be given training, with a focus on the export-led industry. Production-related workers, notably carpenters and mid-level operators, must be given training. The training should last at least six months and training should base on the understanding of the output of modern technologies utilized in the furniture industry. Based on a study of the KIIs and other pertinent data, an estimate of the training required in this industry has been made. The projection shows that, on average, the industry will need to provide training to 5 per cent of employed people each year until 2035. The training is very important in the sections of the machine operator and finishing in large industry and carpentry, and lacquer (designer) in small and medium industry.

The projection is entirely based on the 2016-17 labour force survey, KIIs, and discussions with the BFIOA, as well as the trend in the value-added of this sector. How much value addition and KIIs information is realized will determine the usefulness and validity of the estimated projection. These figures should be regarded as tentative estimations, as many of the assumptions may no longer be relevant after another 5-10 years, requiring re-projection.

An important function that industry links can play in reducing skill mismatches is in the reduction of skill mismatches. Industry can assess sector growth and, as a result, revise the projected training need. More

emphasis should be paid to the practical aspects of establishing such relationships. The most significant channel for developing such a link will be industry associations. The BFIOA can play a role in bridging the gap between the SEIP and industry. Additionally, establishing a centralized training centre in partnership with the SEIP and the BFIOA may provide a coherent framework to reduce the skill mismatch issues.

Since a large portion of the workforce has less than an SSC level of education, their training needs must be considered, and special training modules must be developed. The training must be aligned with the providing of basic education as well as the introduction of the output of the machine in furniture production. In light of the current distribution of women's employment in the furniture business, the need to attract more women into the industry requires special emphasis. For this, women should be given priority for training in skilled development.

Research and development should be prioritized, and the establishment of a furniture village might be a means to expand the sector, simultaneously generating economies of scale and external benefits from capital accumulation.

Skill Gap in the Jute Sector of Bangladesh

Executive Summary

The jute industry has seen many ups and downs, and what was once the country's top export earner is now a low-priority sector due to continued losses in production and sales. Jute is used to produce the natural fiber, also known as the "golden fiber," which is used in a variety of textile products and applications. The demand for jute-related products has declined as a result of the cheap plastic products that have been used as a substitute for jute. Furthermore, decreasing production and revenue in national jute mills contributed to a reduction in the sector's potential. National jute mills have been shut down over time because of inefficiency, the inability of revenue earning, and high maintenance costs. However, as environmental concerns have grown, the usage of jute has begun to resurface, as jute products are biodegradable and recyclable, making them environmentally benign. Bangladesh is still the world's second-largest producer of jute after India, and raw jute and raw jute products are the country's second-largest export earner. Bangladesh has potential in recent times due to a rise in demand for ecologically friendly fibre and products. As a result, Bangladesh must place a greater emphasis on the manufacturing of raw jute and jute items. Furthermore, diversification of jute items is a crucial aspect of realizing the full potential of this industry. Diversification, however, has been hampered by a scarcity of skilled labour. A well-planned training and skill development program is required for medium- and long-term growth of this sector to attain its full potential and to address the low skill level.

The study discusses future labour employment in this industry, the skill level required, and the number of people required to give training. The paper is qualitative in character, with just a limited amount of quantitative analysis available at the skilled level. Based on the qualitative responses and discussions with the private and public Jute Mills associations, the current skill level is assessed. According to

qualitative statistics, there is a substantial skills deficit in this industry. The job requires a modest degree of education and suitable training, which is lacking in their current position.

The increase in the country's value-added and export revenues captures the country's future potential. If we use the average growth of the value-added over the last few years (4 per cent growth) as an estimate, the value-added would increase to 398 billion BDT in FY2034-35 from 221 billion.

Furthermore, export earnings would increase to 2299.7 million US in FY2034-35, representing 4.12 per cent of total goods export earnings, up from 1161.5 million US in FY 2020-21, which represented 3 per cent of total goods export earnings. The employment prediction for the country is based on the value-added elasticity of employment, which means that on average, our employment rises by 6 per cent per year. From 162 thousand in FY2016-17, employment in FY2035-34 would increase to 416.25 thousand. The training projection is supported by data from relevant stakeholders and BJSa. According to the qualitative data, if training is supplied as a targeted proportion of employment, the cost of production and wastage will be significantly reduced. Thus, the KII's suggest that training requires providing the number of employed persons in such a way that 10 per cent of employed persons should receive training. As a result, the KII's suggest, that training should be provided to the number of employed people in such a way that training accounts for 10 per cent of total employment. Thus, the industry must provide training to at least 10 per cent of its employees. As a result, by FY 2034-35, the total estimated trained person must be around 41.63 thousand. There is a shortage of skilled workers in the assortment, batching, cutting, and drawing sections, thus training should be prioritized in these sections.

Regarding the possibility of current jute output and export revenues, the country may be able to reclaim its former glory if adequate skill development programs are implemented. The industry organization might take the lead in analysing the sector's growth and revising the training requirements for personnel. BJSa, BJMC, and BJMA can serve as a link between the training program and its implementation. SEIP can receive industry updates on a regular basis from these associations. As a result, establishing a link between SEIP and industry is critical in determining the task and training program.

The forecast is based on a variety of data sources, with a great reliance on the jute sector's value-added and employment elasticity. The projection's validity and utility are determined by how the value-added is realized and how long elasticity employment will last in the future.

Skill Gap in the Pharmaceutical Industry of Bangladesh

Executive Summary

With a record of impressive performance and increased capacity for value generation, the pharmaceutical industry stands to become a major driver of Bangladesh's growth in the coming decade. Across international markets, the country's pharmaceutical brands have gained wide recognition and a reputation for quality products, as evident in the approvals issued by the U.S. Food and Drug Administration. According to the Export Promotion Bureau, between July 2019 and June 2020, Bangladesh exported pharmaceutical products to 118 countries. However, only 21 countries account for

the majority of the export share, which is around 88%. To only four countries, including the USA, Bangladesh's pharmaceutical exports amount to USD 10 million or more. However, in the USA market, Bangladesh's share is only 0.02%.

While the industry is highly dependent on the import of API and other raw products, the export scenario illustrates the sector's capacity in terms of production and market penetration. Maintaining consistency in product quality and catering to the diverse demand of a global customer base are two defining characteristics of the industry. Yet, the question remains whether this relatively young industry is on the right track to realizing its full potential.

The industry's growth cycle is subject to a number of factors including dynamics of the international market, local policy support and the gap between demand and supply of skilled labour. In the context of the evolving global demand milieu, the industry is faced with a capacity challenge which requires a persistent inflow of skilled labour. A serious skill gap persists in the industry in the form of skill shortage and skill mismatch. The skill gap affects the industry's productivity, performance and efficiency. There are mid to long-term implications for the industry in this regard, in terms of the industry's position in the local and global markets and competitiveness.

Taking into consideration the challenges the industry face in the immediate future, the issue of the skill gap gains all the more significance. As countries around the world embrace automation and artificial intelligence, tightening the competition in the international, it has become mandatory for Bangladesh to improve productivity in manufacturing. For a highly technical industry like the pharmaceutical industry, there is no alternative to adopting innovative technologies—a task that would appear daunting in the face of the stark skill gap.

More importantly, Bangladesh is set to graduate from the list of LDCs (Least Developed Countries) in 2026 which will spell the end of preferential trade benefits and waiver from the Trade Related Aspects of Intellectual Property Rights (TRIPS). Notably, the TRIPS deadline for graduating LDCs was not extended at the 12th Ministerial Conference of the World Trade Organisation (WTO), held in June 2022. Such changes in the international trade regime may induce serious damage to production capacity and market access unless the pharmaceutical industry makes progress in technological innovation and business strategy—both of which are largely dependent on the skill level of the workforce.

This study undertakes a qualitative approach to assess the existing skill gap in the pharmaceutical sector and identify the key factors behind it. It has been estimated that by 2026 the industry will face a shortage of 68365.97 production-related workers and if the industry grows at an average rate of 15%, at least a total of 160720.91 skilled employees in the technical category and 98725.10 skilled employees in the non-technical category will be required by 2035. Without immediate policy actions, it would not be possible to close the mounting gap between labour supply and demand.

There are several sources of skill gap including lack of institutional support, lack of industry—academy collaboration and free riding tendency among market players. To attain the full growth potential of the industry over the next decade, it is absolutely important to address the issue of the skill gap in the sector through extensive and well-designed policy measures.

Addressing the skill gap in the sector will require first and foremost a comprehensive assessment of the existing workforce and the industry demands. The government needs to take the role of coordinator to build and maintain an effective relationship between academia and the industry. Changes in educational structure, including curriculum, across higher educational and TVET institutions are crucial and all concerned parties need to take initiatives in this regard.

Sector-specific occupational composition and associated demand for skill have been at the center of this study. The analysis appraises stakeholders' concerns and priorities with regard to specific aspects of skill shortage and skill mismatch. Based on the projection of labour supply and demand, future manifestations of the existing skill gap have been addressed.

The skill gap in the pharmaceutical industry needs to be addressed as part of a comprehensive framework and needs to focus on sector-specific needs. Both private and public stakeholders have a large role to play in terms of facilitating policy interventions aimed at addressing the skill gap.

Skill Gap in the Plastic Sector of Bangladesh

Executive Summary

Globally, the plastic sector is going to experience growth in the foreseeable future. In Bangladesh, the sector has also experienced a drastic and accelerated growth rate, regardless of the lack of adequate policy support in the past decade. The global market share is up and the Bangladeshi entrepreneurs are enthusiastically moving forward as well. However, as explained in this paper, the sector requires strong policy level support to realize its potential and diversify the export basket, a buzzword echoed in the discussions regarding the economy. Due to the informality present in the economy of Bangladesh, the plastic sector is yet to grasp the necessity of *'integration and enhancement of capacities and investments in skilled human resources'*, while they certainly acknowledge the importance of *'integration and enhancement of capacities and investments in state-of-the-art technology'*. However, during the interviews, the researchers were able to find the perceived issue of the "skill gap" among the entrepreneurs.

This paper, therefore, looked deeper into the “skill gap” issues present in the sector and attempted to recommend solutions. The paper primarily relied on the Key Informant Interviews (KIIs) method to analyze the present scenario of the “skill gap”. The research team relied on the sector representative association’s members, who are entrepreneurs as well, along with trainers and staff who have the necessary insights regarding the employed labour force.

The plastic sector in Bangladesh is dominated mostly by SMEs, which has resulted in certain labour market features. A key sector restriction is the scarcity of trained technical and management labour. Strengthening the Bangladesh Industrial Technical Assistance Centre and the Bangladesh Institute of Plastic Engineering and Technology will be the quintessential policy direction for addressing the skill gap. In terms of research and development, the collaboration between BPGMEA, BITAC, BIPET, BUET, and Asia Plastics Forum should be expanded. TVET curriculum and educational changes should not be restricted to the manufacture of plastic products. The plastic sector's backward and forward links should be considered.

The Lack of availability of a skilled technical and managerial workforce is a major sector constraint. To mitigate this problem, it is suggested that the Bangladesh Institute of Plastic Engineering and Technology (BIPET) act as a nodal agency for skill up-gradation for the plastics Industry, It should collaborate with foreign institutions and universities of repute, develop CAD/CAM training and certification courses, enable international exposure for industry personnel via technical and techno-managerial courses, and develop an industry-relevant curriculum in discussion with industry leaders. The BIPET also needs to scale up its production of trained manpower several times to provide the support the industry requires.

To address the high turnover rate in the plastics industry, the compensation structure must be revisited. An enhanced compensation structure would not only give a protective cushion against worker turnover, but will also provide long-term leverage. Bangladesh has a lot of potential in the plastic recycling industry. Only a multi-sectoral approach will allow the plastics industry to grasp this massive recycling market.

Given the great potential of the recycling sub-sector and its positive externalities, it is also in the public interest to bring in skilled labour.

Skill Gap in the Renewable Energy Sector in Bangladesh

Executive Summary

Global employment in renewable energy was estimated to reach 12 million in 2020, up from 11.5 million in 2019 (IRENA, 2021). The renewable energy sector is ranked 8th among the 24 "Priority Sectors" in Bangladesh's National Industrial Policy 2016. Priority will be given to foreign investment and expatriate Bangladeshi investment in setting up renewable energy-based power plants. Renewable energy reduces poverty through increasing access to energy, which allows for the establishment of new enterprises and job possibilities for the poor, reinforced by financial inclusion. Bangladesh is ranked 5th among 161 countries in creating solar photovoltaics employment. Solar jobs are concentrated in 5.8 million

installations of off-grid solar home systems. The Sustainable and Renewable Energy Development Authority (SREDA) is formed to control global warming, reduce the risk of natural disasters and ensure energy security in Bangladesh. Bangladesh currently has renewable energy installed capacity of around 788.76 MW, only around 3% of total energy is produced from renewable sources. This must be raised during the 8FYP, according to the GoB (GED, 2020) Bangladesh needs to achieve the SDG target of 10% share of renewable in total energy by 2030.

Solar energy is currently the most promising of the various renewable energy sources in Bangladesh. About 6 million solar home systems have been installed so far and the number is increasing due to the integrated program adopted by the government through the non-bank financial institution, IDCOL. Biogas and biomass have limited use in Bangladesh till now. Bangladesh imports 6% of the present power generation capacity which is 1,160 MW (BPDB, 2022). Due to a lack of suitable land, the implementation of renewable energies on a wide scale in Bangladesh is restricted. To accommodate anticipated future demand, Bangladesh needs more advanced research facilities as well as trained labour.

There is a significant gap in the skills and education required for the industry. Design engineering jobs are predominantly highly skilled and permanent while most are semi-skilled in construction and operations. The suppliers of renewable energy need more experts, skilled engineers and technicians, according to industry insiders. A high rate of job turnover due to the absence of job security, training programs, job benefits and so forth is present in this sector. The stigmatization resulting from the informal nature of employment, and subsequent family pressure is demotivating young graduates from tertiary educational institutes. There is no specific department for Renewable energy engineering in the universities of Bangladesh. Employers prefer hiring unskilled workers and providing them with short trainings. Hands-on training is more common than certified training in this subsector. However, trainings are arranged regularly by some of the firms for up-skilling. The existing firms are able to ensure effective training programs for the workers, according to the stakeholders. There are mainly two types of training categories, field-based and in-house training as needed by the firm. Hands-on trainings are more common for small companies in the renewable energy sector. The technical education system can play a more involved role to produce skilled labour force. Adequate laboratory, infrastructure, and investment are required to scale up from assembly-line to innovative solutions. The lack of R&D-related skills and funding in the research and development department of this sector is a major concern. There is immense potential in the renewable energy sector as it is environmentally friendly. In the next 10 years, the energy sector will boost up and will need many more engineers and researchers. Government should undertake more initiatives to increase skilled labour who can use mobile apps in the process of digitalization. Despite being on the priority list of GoB, the demand for renewable energy has not increased. After sales service quality is very low which reduces user satisfaction and the market is hampered overall. Proper implementation of policies also needs to be addressed for this sector to gain momentum.

According to the projection of this study, Bangladesh will have 2.82 lakhs of renewable energy jobs by 2035. At present, there are 1.1 lakh jobs in the solar photovoltaic industry in Bangladesh which is projected to reach 2.42 lakhs by 2035. Around 1.55 lakhs of them would require minimal training certification, and 75 thousand others would need to be from a STEM background.

The unavailability of employment data is hindering the development of necessary action plans for the skill development in the sector. The government may emphasize the collection of quality data regarding the employment scenario of the renewable energy sector. If the skill gap and mismatch concerns are to be addressed, public and private investment in research and development of this sector are crucial. Government should focus on on-grid renewable energy besides off-grid to meet the energy demand and to better compete with the non-renewable sources of energy. Solar is still the most dominant sub-sector in the renewable energy sector while the country is still lagging in the smaller subsectors like wind and biomass, which often remain unnoticed. The pandemic hit this sector extensively. Many firms limited their operations and scaled down their production. Government support is needed not only for skill development but also for the overall growth of this sector. The government should explore all the opportunities and scopes to expand the sector as much as possible. Proper implementation of the relevant policies such as Renewable Energy Policy and Industrial Policy should be prioritized.

The skills of the workers in this sector are at the bottom of the priority list of this sector's stakeholders due to the apparent lack of demand in the sector. However, a skill gap can still be an alarming issue in this sector from the perspective of the emerging fourth industrial revolution and LDC graduation of the country if not addressed timely. More in-depth quantitative investigations on certain categories of firm size and type can produce critical insights.

Stocktaking of Technical and Vocational Education and Training (TVET) Institutions in Bangladesh

Executive Summary

The study is essentially based on the secondary data and information and largely relies on the TVET Institution Census 2015. It also draws upon consultations with the relevant stakeholders including *inter alia* members of the Executive Committee of NSDA, teaching staff of DTE and BMET, course and curriculum staff of BTEB, BITAC and social partners including BEF and NCCWE. All this is supplemented by primary data collected through a field survey.

The stock of supply of skills by the TVET institutions in Bangladesh is primarily provided by four TVET streams: (i) Diploma Program, (ii) HSC (Voc)/BM, (iii) SSC/Dakhil (Voc), and (iv) NSSB Course. As in 2015, there are 13163 TVET institutions in the country of which individually/family owned institutions figures most prominently followed by MPO institutions and public institutions. Existing TVET institutions produced 1743 thousand graduates in 2015

with overwhelmingly highest proportion in NSSB course (77.2%). TVET institutions who are offering these courses usually conduct training as many shifts as they can accommodate.

For diploma graduates, electrical engineers account for the largest share followed by civil engineers and computer engineers. Garments and clothing, laboratory technicians, agricultural and electronics engineers and garments design and pattern making are also important trades in this stream. For HSC (Voc)/BM graduates, computer operation and maintenance figures most prominently followed by secretarial science and accounting. Among other important trades in this stream are entrepreneurship development and banking. For the SSC (Voc) graduates the most important trades are: computer & information technology, general mechanics, general electrical works and dress making. In NSSB course, computer operation/programming emerges as the single most important trade accounting for 42.24 percent of total graduates. Among other important trades in this stream are graphics design & multimedia programming, database programming, dress making & tailoring and hardware & networking. Unclassified trades in this stream comes out the highest of all streams concealing a large number of trades.

Estimated trend rates of growth of BTEB approved graduates over the period 2011–2019 are: 8.16 for Diploma graduates, 4.01 for HSC (voc)/BM graduates, 2.38 for SSC/Dakhil (voc) graduates and 19.75 for NSSB course graduates. The average trend rate of growth of all TVET graduates is consistent with the GDP growth rate of the country and is most likely to continue into the future over the period 2020–2030.

The total supply of TVET graduates in the country is estimated at 8.8 million in 2025 (with 292,342 Diploma, 174,206 HSC Voc/BM, 186,071 SSC Voc and 8,157,564 NSSB) as well as at 20.9 million in 2030 (with 432,737 Diploma, 212,050 HSC Voc/BM, 209,291 SSC Voc and 20,088,067 NSSB) indicating that it would more than double every five years. This is more likely to be the scenario in the country because capacity building of the TVET institutions and esp. NSSB courses are being generously supported by the donors, esp. by SEIP of ADB.

BTEB is the only statutory body to ensure TVET certification which approves TVET courses in 42.3 percent of the training institutions, while a larger share of the non-BTEB institutions have their own curricula indicating prevalence of a wide variety of course curricula followed by TVET institutions. Unqualified teachers mostly and some government officials with little or no exposure to the world of work still tend to prepare and set curricula. Curriculum is not available in about one-third of TVET institutions not approved by BTEB. There is no qualified curriculum specialists in the non-BTEB institutions. Workplace curriculum that is current, accessible and implementable is being contributed by the SEIP. TVET institutions are in crisis of teachers in terms of not only number but also their competence in delivering skills. Besides, the TVET teachers are not trained in pedagogy, and have very limited practical skills and industrial experience. Consequently, the gap between the training system and employment needs and opportunities keeps widening and uniform quality and standard is not created and embedded telling heavily upon the effectiveness of TVET.

TVET institutions have very poor infrastructure. Only 24.4 percent of institutions have industrial attachment (2015). TVET institutions under individual ownership which account for the largest share of institutions have the least proportion of industrial attachments. Public sector institutions

fare worse than all other types except those individually owned. The largest proportion of the institutions practicing hands-on training of their students in the industries have a duration of 1–3 months followed by less than one month and 3–6 months reflecting inadequate school-industry linkage in terms of duration. Currently, there are 260 institute-industry linkage and 119 industry-based trained teachers in BTEB approved institutions. Nationally only 8.4 percent of TVET institutions provide job placement facility, which is, however, increasing phenomenally due to SEIP intervention.

Skills mismatch is high ranging from 10.89 percent to 50 percent both in the short- and longer term indicating that the effects of TVET on the probability of being mismatched are persistent. The effect of TVET on qualification mismatch appears to be driven mainly by a lower probability of under-qualification and higher probability of over-qualification. Among the diploma trades, skills mismatch figures most prominently in electro-medical and mining & mine survey followed by environmental, civil and civil wood. Among the HSC graduates, skills mismatch is most critical in fish culture & breeding (100%) followed by computer operation and maintenance, agro machinery, refrigeration & air-conditioning and welding & fabrication. Among the SSC graduates, skills mismatch is most critical in agro-machinery, electronics control and communication, and refrigeration & air-conditioning (100% each) followed by fish culture and breeding, and welding & fabrication and clothing & garments finishing. Among the short course graduates, most prominent skills mismatches are found in plumbing & pipe fitting and welding & fabrication, and carpentry cum wood work machine operation. There is no incidence of skills mismatch in the case of CNC machine operation and web designing. Most recent evidence, however, shows that skills mismatches have narrowed down significantly due to the implementation of market-responsive SEIP.

However, TVET graduates are in great demand in the labor market. Overall, they account for 53.9 percent of the total number of technical staff and workers employed in different sectors. Largest proportion of them are employed in the manufacturing of construction products followed in order by education, solar power, trading of agricultural products, manufacture of electrical products and electrical services.

Across type of technical staff employed there exists wide variation in the demand for TVET graduates. All the diploma engineers employed in education, solar power, services other than medical and electrical, and trading of agricultural products, are TVET graduates. Overwhelming majority of the TVET diploma graduates are employed in IT, garments, real estate/construction, manufacturing of electrical products, agro processing, electrical products service and medical service. TVET technicians are in great demand only in education and solar power. Demand for them is non-existent in the manufacture of medical equipment, medical services and agro processing. As for workers, largest share of the TVET graduates is found in the manufacture of electrical products (89.5%) followed by education and electrical products.

Almost all the employers are satisfied on the performance of the TVET graduates indicating that TVET graduates are faring very well across the board. Almost all of them have full confidence in the competence of the TVET graduates who are both trainable and adaptable. There is no divided opinion among the employers in the manufacturing of electrical products and medical

equipment, architecture firms, trading of agricultural products and production of solar power. For majority of the employers, existing competence of the SEIP graduates is adequate.

However, quality and effectiveness of TVET is hampered by lack of trained teachers, lack of in-service training opportunities, absence of quality of teaching and learning outcomes, high vacancy rate for teaching positions in public training institutions, curriculum updating not adequately adaptive and overreliance on written examination, overemphasis on theory and testing rather than on practical instructions, inadequate financing with use of old-fashioned equipment and training materials, and poor labor market research and linkage with industries.

For the development of skills development in the country the GOB has undertaken a large number of policies and programs in the development of TVET over time. Substantial changes have taken place in the overall skills development system including legislation, administration, operation and implementation of various policies and programs. TVET Reforms Project spearheaded a paradigm shift in the key policy initiatives of the GOB resulting in the creation of (i) NSDP -2011, (ii) NTVQF and (iii) NSDA. For improving the quality and relevance of TVET, most important landmark changes are: (a) enhanced skills training, (b) NTVQF implementation manual, (c) National quality assurance system, and (d) twelve new NTVQF programs – first ever. Number of programs are expanding. Currently, only Agro-Food ISC, Ceramic ISC, Construction ISC, Furniture ISC, Informal Sector ISC, and Leather & Leather Goods ISC, are functioning. The rest are not functioning reportedly due to the inertia of the sectoral leaders.

The NTVQF established in 2011 under the BTEB, is a comprehensive, nationally consistent yet flexible framework for all qualifications in TVET in Bangladesh. The National Skills Quality Assessment (NSQA) system was established to ensure the quality of demand-based skills development. NSDP-2011 provided a national vision and direction for skills development and put a more concrete emphasis on three areas of focus: quality, equity and access, and governance. NEP-2010 provides a strategic approach to vocational and technical education to build up skilled manpower. NFEA-2014 focuses on *inter alia* opening up opportunities for lifelong learning and developing competence for self-employment. NSDA Act 2018 and BTEB Act 2018 are in line with the same goal. But the interface of these policy and regulatory interventions still remains a grey area. The NSDA Act, BTEB Act, and the NFE Act have some issues to be further clarified in line with the mandates and capacity of the respective authority. Issues are related to the RPL certification, training impartation, certification and accreditation of training providers. Both legislations allow the respective organizations to be involved in training quality improvement, certification and mutual recognition. NSDA being the apex body for coordination and overall quality direction, its micro-level involvement may not only create confusion, but also could jeopardize its apex role. However, draft NSDP-2020 with NSQF and NHRDF Rules-2020 are in place with a much greater promise of a paradigm shift in the skill development ecosystem of Bangladesh.

The major policy challenges are: (i) creating “decent work” to better wages and work conditions, (ii) appropriate alignment of SDGs in the development plans and programs, and (iii) readiness to 4IR. They point to the need for steps to build stronger “foundational skills” through basic general education, “transferrable skills” through secondary education and TVET and “job specific skills” through high quality TVET and apprenticeship along with soft skills. These skills building

measures need to be combined with complementary policy intervention in the labor market and social protection for workers. Encouragingly, TVET system has developed capacity to address skills need of the informal sector which accounts for about 85.1 percent of total employment.

Another area of concern is the lack of systematic effort to prepare workers for overseas employment and raise their skills profile to improve their earning and working condition. The large majority of these workers are low-skilled and working with low wages and in vulnerable conditions. It is necessary to develop relevant training structures that will be responsive to the needs of the international labor market in the age of 4IR.

BTEB remains the only body responsible for the implementation of NTVQF and quality assurance of TVET through accreditation of training providers, curriculum development, examinations, and certification. But majority of TVET institutions still remain outside the jurisdiction of BTEB. The challenge lies, firstly, in bringing all TVET institutions under BTEB control, and secondly, in the rolling out of the NTVQF and NSQF as early as feasible.

Policy Recommendations

In order to make the TVET system in Bangladesh demand-driven policy interventions in four main areas are required: (i) Creating partnerships between employers, government and educators through new governance arrangements; (ii) Undertaking labor market skills assessments in key economic sectors in order to direct training provision to meet labor market demand; (iii) Designing new competency-based curriculum built on the skills profiles of specific occupations; and (iv) Raising awareness of the role of employers in TVET through campaigns and other initiatives.

1. Improved matching of skills demand and supply: The skills development system needs to be responsive and relevant to labor market needs, with good coordination between demand for and supply of skills. The policy should support active and regular engagement of the social partners to reflect their needs in planning and delivering skills. Other means of improving skills matching include: (a) improving mechanisms for **anticipating skills demands** and disseminating the information to inform policy making and the planning of training; (b) **integrating strategies** that embed skills development within broader development strategies; (c) strengthening **quality assurance** in delivering training, through benchmarks and criteria for providers, and certification systems that increase the value of qualifications and certificates; (d) enhancing **employment services** to improve the matching of jobs and skills, the collection and provision of LMI (i.e. job opportunities and skills requirements), and the linkage of that information with training; (e) **more flexible training provisions** in respect of both content and delivery.

2. All efforts should be underpinned by continuous research: (i) Policy development and review should be supported by continuous research into various aspects of human resources development as indicated by the ILO's Recommendation No. 195; and (ii) Continuous monitoring and evaluation of the policy's impact will provide key inputs for policy review.

3. Meeting today's and tomorrow's skills needs: In linking skills development to gains in productivity, employment and development, skills development policy should target three main

objectives: (i) matching supply to current demand for skills – relevance and quality of training; (ii) helping workers and enterprises adjust to change – movement of workers and enterprises from declining or low-productivity activities and sectors into expanding and higher-productivity activities and sectors; and (iii) building and sustaining competencies for future labor market needs.

Convergence across policies: Skills and employment policies should be viewed together. For investments in training to yield maximum benefit to workers, enterprises and economy, country’s capacity for coordination is most important in three areas: (i) connecting basic education to technical training, technical training to labor market entry, and labor market entry to workplace and lifelong learning; (ii) ensuring continuous communication between employers and training providers so that training meets the needs and aspirations of workers and enterprises; and (iii) integrating skills development policies with other policy areas – not only labor market and social protection policies, but also industrial, investment, trade and technology policies.

4. Building Blocks of Robust Training and Skills Development Strategies and Policies:

Robust training and skills strategies and policies are constructed from a number of building blocks including *inter alia* anticipating future skills needs, participation of social partners, sectoral approaches, LMI and employment services, training quality and relevance, self-employment and the informal economy, and assessing policy performance.

5. Mainstreaming the SDGs: GOB’s SDG commitments in TVET are primarily focused on increasing the quantity of training opportunities so that there is an equal access for all. Quality, rather a balance between quality and quantity should factor in target setting, indicators and results framework for TVET in the context of SDGs. SDG 4 was aligned in the SFYP but could not bring in tangible results due to institutional bottlenecks. It has been realigned in the 8FYP and PPB2041 with a greater promise. Systemic and institutional arrangements will be put in place for early implementation of the skills needs for green jobs in various sectors, occupational profiles, curriculum design and education and training provision for greening existing occupations and for developing emerging and new green occupations. The best that skills policy can aim for is “islands of excellence” amidst skills gaps and shortages. National curricula should encourage critical thinking, adaptive mindset and creative discussions from diverse perspectives, and give learners the opportunity to exchange knowledge and ideas on alternative solutions for economic, environmental and social issues allowing learners to understand their multiple identities, to work out what their roles should be for living together on a common planet and building a better future.

6. Readiness to the Fourth Industrial Revolution

We are at the threshold of the Fourth Industrial Revolution (4IR) that will fundamentally alter the way we live, work, and relate to one another. In its scale, scope, and complexity, the transformation will be unlike anything humankind has experienced before. We do not yet know just how it will unfold, but one thing is clear: the response to it must be integrated and comprehensive, involving all the stakeholders.

The 4IR is much different from the earlier industrial revolutions. The 4IR is building on the 3IR, the digital revolution that has been occurring since the middle of the last century. The 4IR is different from the 3IR for two reasons: the gap between the digital, physical and biological worlds is shrinking, and technology is changing faster than ever. Compared with previous industrial revolutions, the 4IR is evolving at an exponential rather than a linear pace. Moreover, it is disrupting almost every industry in every country; and the breadth and depth of these changes herald the transformation of entire systems of production, management, and governance. The 4IR can be described as the advent of “cyber-physical systems” involving entirely new capabilities for people and machines, it represents entirely new ways in which technology becomes embedded within societies and even human bodies. “There has never been a time of greater promise, or one of greater potential peril.” there are three big areas of concern: inequality, security and identity. The 4IR is being driven by a staggering range of new technologies that are blurring the boundaries between people, the internet and the physical world. The 4IR upends current economic frameworks. It is a fusion of advances in AI, robotics, the IOT, 3D printing, genetic engineering, quantum computing, and other technologies. It is the collective force behind many products and services that are fast becoming indispensable to modern life.

4IR has the potential to disrupt labor markets. As automation substitutes for labor across the entire economy, the net displacement of workers by machines might exacerbate the gap between returns to capital and to labor. On the other hand, it is also possible that the displacement of workers by technology will, in aggregate, result in a net increase in safe and rewarding jobs. We cannot foresee at this point which scenario is likely to emerge, and history suggests that the outcome is likely to be some combination of the two. However, one thing is convincing that in the future, talent – more than capital, will represent the critical factor of production. This will give rise to a job market increasingly segregated into “low-skill/low-pay” and “high-skill/high-pay” segments leading to an increased social tensions.

However, all industrial revolutions create and destroy jobs, but there is evidence that new industries are creating relatively fewer positions than in the past. Future jobs will increasingly require complex problem-solving, social and systems skills. An upward bias to skill requirements disproportionately affect older and lower-income cohorts and those working in industries most prone to automation by new technologies. Workers are increasingly turning to alternative work arrangements like side hustles, freelancing, independent contracting and gigging. A host of factors fuel the rise of the gig economy, including increased globalization, advancements in technology and static educational and institutional inertia that cannot keep pace with changing workforce demands. Thus workers in every industry will experience the transformation brought about by the 4IR, if they have not already. An answer to this could be ‘continuous up-training’: a system that would allow every employee to devote significant time to acquiring fresh skills. Besides, two sets of strategies seem reasonable in order to prepare ourselves for these shifts: (i)

to invest in building and developing skills linked to science, technology and design so that we equip the world with people able to work alongside ever-smarter machines, thus being augmented rather than replaced by technology; and (ii) to focus more on those qualities that make us uniquely human rather than machines – in particular traits such as empathy, inspiration, belonging, creativity and sensitivity.

Potential threats to the labor market with the onset of the 4IR are giving rise to quality assurance among TVET institutions. Low-skilled and repetitive jobs are bound to be eliminated by robots and AI. This will force TVET institutions to partner and collaborate to ensure that TVET remains relevant in the future. It is projected that technological advances – AI, automation and robotics – will create new jobs, but those who lose their jobs in this transition may be the least equipped to seize the new opportunities. Today’s skills will not match the jobs of tomorrow and newly acquired skills may quickly become obsolete. The greening of our economies, however, will create millions of jobs as we adopt sustainable practices and clean technologies, but other jobs will disappear as countries scale back their carbon- and resource-intensive industries.

Specific policy interventions recommended include: (i) Activate and update NSDP-2020 to reflect the new challenges and opportunities of the TVET and skills development; (ii) Complete the rolling out of the NTVQF and NSQF; (iii) Operationalize the NTVQF and NSQF through government orders and through appropriate communication strategy; (iv) Address the issues related to NTVQF certification among BTEB Act, NSDA Act and NFE Act; (v) Assign a single competent agency to lead on the management of the LMI System (both supply and demand) to be supported by other relevant agencies; and (vi) Adapt TVET trainings to integrate all the skills mentioned in the skills portfolio and focus trainings on the top-ten skills noted in the text to prepare students with the best education for the job market in the future. The concept of lifelong learning, along with soft skills development, must be at the crux of the paradigm shift in the age of the 4IR.

SKILL GAP ANALYSIS OF OVERSEAS JOB MARKET – THE EXPERIENCE OF BANGLADESH

Executive summary

Perspective:

Overseas employment and overseas remittances have been major catalysts of the Bangladesh economy and society for the past decades. More than total 12 million Bangladeshis have so far migrated abroad on employment, and most recently the country earned US\$ 22 billion as remittances in one year. Remittances are equivalent to about 8% of the country’s GDP; a major contributor to country’s balance of payments; almost 10 times higher than annual inflow of external grants and loans. Disbursed across millions of migrant households remittances have been a driver in country’s socio-economic development; disposal of

remittances for consumption, saving and investment purposes create linkage effects on local, regional and domestic economy.

Three particular features underscore Bangladesh's experience in international migration. First, there are periodic swings – both upward and downward, in overall trend of migration; the journey at times is very bumpy – running at high gears at times but slowing down immediately afterward. Secondly, international migration from Bangladesh tends to be rather demand oriented – rising and falling as market dictates. There exists very little experience with “supply creating its own demand.”

Finally, particular skill categories dominate the country's overall migration pattern. About 40% of migrants comprise unskilled workers represented by skill categories such as labor, menial workers, servants, cleaners, helpers, farmers, etc. With feminization of international migration in recent years, more and more female workers are getting involved in low-skilled domestic services.

Improved skill-mix of overseas migrants - in favor of professional and technical skills, is pertinent to enable a greater flow of remittances. A greater focus on qualitative aspects of migration - rather than quantitative, would be crucial for a greater flow of overseas remittances and also on a sustained basis. Professional and semi-professional migrants earn many times higher than menial and semi-skilled migrants. Taking advantage of any existing overseas market opportunities not only will enhance level of remittances, more important, ensure stability in its flow over time.

The purpose of this exercise is to analyze future prospects of overseas employment from Bangladesh with a view to identifying skills having international market opportunities, and to highlight respective implications for country's future skill development. Specifically, the study focused on following questions: What prospects does Bangladesh have in terms of level and skill composition of overseas migrants? (c) What are the particular occupations and skills which have greater job prospects? The ultimate goal is to identify and discuss international demand for professional and technical skills moving forward.

Major observations:

The overall trend of migration so far has been positive, and there prevails great optimism about the future of migration from Bangladesh, as based on the perception of sample return migrants, key informants, and recruiting agents surveyed. The optimism is persistent even following Covid-19 pandemic.

Both demand and supply side factors underline the future prospects of migration being very good, good, or least stable based on the opinion of sample returned migrants, key informants, including survey of existing literature. Prospects exist for employment of various professional and technical skills across different countries and regions. And there are particular economic sectors which offer demand prospects more than others. Three different skill categories having future demand prospects include: health and medical related professions, engineering and technology, and information sciences.

Demand prospects exist for doctors and nurses with varying specialization, including certain gender preferences. Demanding engineering subjects are quite varied covering almost all branches of the subject area – civil, mechanical, electrical, and architecture. Pharmacists also have future job prospects.

Prospective technical skill categories are varied. These, however, are quite aligned with various professional skills identified as engineering, health, and information technology. Divided under broad occupational categories, prospective technical skills are those involved in (a) construction and maintenance, (b) industrial operations, and (c) various type of services. Prospective technical skills

associated with construction and maintenance of civil activities includes mason, plumber, carpenter, electrician, welder, etc.

Major conclusions:

Improved skill composition shall enable greater overseas remittances and stability in migration flow:

Improved skill-mix of international migrants shall have positive effect on the inflow of remittances and enable greater stability in international migration flows. Low job turnover rate of professional and technical people - unlike their low skilled counterparts, would be no less an important issue.

Existence of demand for professional and technical skills: Market opportunities exist for employment of professional and technical skills across major geographical regions and countries which need to be explored and exploited. Currently, there are employment opportunities for different professional and technical skills across countries; there are countries with demand for particular skill categories. These include professionals like doctors, engineers, IT personnel, accountants. Similarly, there exists also demand prospect for various technical skills mostly associated with different professional categories and related economic sectors. These include construction, health, and various service activities.

Augmenting domestic supplies of professional and technical skills could be challenging: Tapping any existing excess capacity apart, in all possibility local supplies will need to be increased per overseas market prospects. This could prove quite challenging at least on three counts.

First, there will be need to identify skills with demand prospects. Questions like type of skills in need, level of need, time period, destination countries, etc. will need to be worked out. Second, is building domestic physical infrastructure to cater to future demand for professional and technical skills as identified. Third important challenge would be appraising level of investment required to build necessary infrastructure to increase domestic supplies of professional and technical skills including possible funding.

Compliance with international standards: Domestic supply of professional and technical skills aimed at overseas labor markets will need to comply with international standards including associated job experience. This underlines the quality of education and training imparted locally, and based on hands-on training and practical experience. Current observations – rather most critical, is that domestic trainings – especially for professional and technical skills, are far from being comparable with international standards

Policy prioritization to tap latent opportunities: Policy planners need to appreciate and recognize the prospects and potential of exporting more of professional and technical skills to earn more remittances and ensure greater stability in overall flow of overseas employment.

Policy recommendations:

Policy strategy in favor of qualitative aspect of international migration: Qualitative rather than quantitative aspect of international migration should be country's policy goal. The policy thrust should be to maximize net benefits from international migration in terms of earning overseas remittances and ensuring stability in migrants' outflow.

Stock taking of domestic supplies of professional and technical skills: Emphasis on improved skill-mix of migrants would require stock taking of professional and technical skills as currently available in the country, and shall underline future supply prospects. This is important on two counts: appreciating

level, trend, and composition of country's supplies of professional and technical skills, and highlighting existing institutional facilities underlying domestic supplies.

Infrastructure building: A two prong approach could be followed: utilization of any existing excess capacity – qualified graduates under- or unemployed or enrollment capacity not fully utilized, and establishment of infrastructure facilities on a select basis.

One could start with a few skill categories and improving respective supply capacities. There could be an additional dimension to the supply process: retraining any existing stock of professional and technical skills in compliance with the required quality and standard of overseas markets.

Participation of stakeholders in decision making: Greater participation of professional and technical skills in the country's international migration basket will call for effective participation of major stakeholder in the decision making process. Particularly important here are government agencies, recruiting agents, and organizations and institutions active in labor market studies – both at home and abroad.

Branding of Bangladeshi professional and technical skills: Branding Bangladesh as a source of proficient and experienced professional and technical skill is important. Current image of Bangladesh as supplier of unskilled menial workers - so called "miskins" – and, most recently, as female domestic workers experiencing domestic violence and physical abuses – should receive serious face lifting. Glorious images of Bangladesh's human capitals reputed globally including experiences in designing, constructing and maintaining some of world's iconic structures will need to be projected overseas.