

TRAINING NEEDS ANALYSIS AND SKILL DEVELOPMENT MAPPING FOR EIGHT ECONOMIC ZONES IN BANGLADESH

Exploring significant factors for achieving competitiveness
through human resource development

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Government of the People's Republic of Bangladesh

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Bangladesh Economic Zones Authority (BEZA)

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Client: Bangladesh Economic Zones Authority
Country: The People's Republic of Bangladesh
Submitted by: Certif-ID International GbR

OVERVIEW & ACKNOWLEDGEMENTS

The Project “Training Needs Analysis and Skill Development Mapping for Eight Economic Zones in Bangladesh” has been developed to proactively respond to the needs arising from the potential manufacturing, trade and employment implications of selected economic zones of Bangladesh.

The Training Needs Analysis (TNA) aims to identify opportunities and address key skills challenges in the backdrop of integrating upcoming firms into global value chains, generating economic growth and employment. The study proposes short, mid and long-term demand for labour, with a focus on advice and support for the Bangladesh Government and World Bank’s jobs and skills development agenda.

The work was carried out in close collaboration with the Bangladesh Economic Zones Authority (BEZA), Prime Minister’s Office. The team would like to extend special gratitude to Md. Hamidul Islam and Md. Abdul Quader Khan for providing access to the primary microdata sources used in the report including the investors and developer survey, investor workshop and the economic zones information.

The study draws upon relevant data from international and national sources and was extensively guided by knowledge and insights gathered through relevant stakeholders in Bangladesh. The TNA was prepared by a team consisting of: Timothy Miller (Founder Certif-ID), Kevin Waeschebach (Training and Workforce Development Expert), Manish Joshi (TVET & Higher Education Specialist), Md Minhaj Ul Islam Majumder (Operations Lead), Teeyah Seetharam (Head of Content, Certif-ID), Michael Wild (Director Certif-ID) and Rakshit Manga (Digital Data Analyst). Ishtiak Ahmed Taher (Labour Market Research Expert) and Shubhanjana Sikdar (Research Associate) provided excellent survey research and study support. Nikita Raaj (Design Lead) provided invaluable support on design. In addition, valuable comments and suggestions were received from Christian Vetter (CEO), HR Forecast.

The team would also like to express gratitude to the participants of workshops and consultations held in Dhaka between January 01 and February 18, 2021.

ABBREVIATIONS & ACRONYMS

BEZA	Bangladesh Economic Zones Authority	TNA	Training Needs Analysis
EZ	Economic Zone	ESCO	European Skills, Competences, Qualifications and Occupations
PRIDE	Private Investment and Digital Entrepreneurship	DQR	German Qualifications Framework
BIDA	Bangladesh Investment Development Authority	EQF	European Qualifications Framework
BBS	Bangladesh Bureau of Statistics	ICT	Information and Communication Technology
BEPZA	Bangladesh Export Processing Zone Authority	IT	Information Technology
BEF	Bangladesh Employers' Federation	LMIS	Labour Market Information System
CPD	Centre for Policy Dialogue	RMG	Ready Made Garment
BIDS	Bangladesh Institute of Development Studies	RPL	Recognition of Prior Learning
EPB	Export Promotion Bureau	R&D	Research and Development
BTEB	Bangladesh Technical Education Board	FLFP	Female Labour Force Participation
NSDC	National Skills Development Council	ESA	Enterprise & Skills Agency
PSDSP	Private Sector Development Support Project	SHED	Secondary and Higher Education Division
NSDA	National Skills Development Authority	SME	Small and Medium Size Enterprise
NSDP	National Skills Development Policy	STEM	Science, Technology, Engineering, and Mathematics
OECD	Organisation for Economic Co-operation and Development	TVET	Technical and Vocational Education and Training
BGMEA	Bangladesh Garment Manufacturers and Exporters Association	PPP	Public Private Partnership
BSMSN	Bangabandhu Sheikh Mujib Shilpa Nagar	G2G	Government to Government
Araihazar EZ / JEZ	Japanese Economic Zone	PwC	PricewaterhouseCoopers
MIEZ	Meghna Industrial Economic Zone	AML	Abdul Monem Ltd.
KEZ	Kishoreganj Economic Zone	ETP	Effluent Treatment Plant
AMEZ	Abdul Monem Economic Zone	GDP	Gross Domestic Product
CEIC	Census and Economic Information Center	USDA	US Department of Agriculture
BITAC	Bangladesh Industrial Technical Assistance Centre		
BTEB	Bangladesh Technical Education Board		

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I. EXECUTIVE SUMMARY

Bangladesh is adopting a well-structured approach to achieving EZ-led economic transformation, playing a significant role in creating more jobs and improving the quality of existing jobs.

To become a developed nation under Vision 2041, BEZA is setting up new Economic Zones (EZ) through liberal trade, diversification and modernization of industry, employment, production and export. BEZA aims to make Bangladesh more investment-friendly, foster industrialisation, socio-economic development and generate 10 million jobs directly or indirectly.

To further this vision, the Training Needs Analysis (TNA) which is the subject of this study is an initial exercise to provide baseline information which will be used to help BEZA drive transformational change in generating hundreds of thousands of new skilled workers in the targeted EZs.

The approach taken was to:

1. Create a stakeholder map
2. Conduct extensive interviews across the stakeholders with a focus on EZ developers and investors
3. Conduct in depth global job data analytics based on 9 predefined focus industries
4. Examine the existing education framework in Bangladesh
5. Focus on Skills anticipation as a means to manpower forecasting
6. Look into the importance, and implications of core skills.

Short Term Training Needs:

The report findings show that there will be limited manpower requirements throughout the year 2021. It is estimated that there will be in the region of 600 new jobs created this year in the areas of RMG, Automotive and Packaging. The data outlines that the existing training schemes in Bangladesh can support short term training needs, with a particular focus on entry level, and foundational technical skills.

For Skilled and High-skilled job roles, there may be a need to source from across Bangladesh, and potentially from overseas. This is also likely in the ramp up phase of new factories.

Mid to Long term Training Needs

The volume of operational factories will significantly increase from 2022 onwards. This will result in the creation of thousands of jobs, and in turn put significant pressure on the existing training and qualification structures. The need to focus on higher skilled training programs that reach beyond Level 4 of the current National Training and Vocational Qualification Framework (NTVQF) is essential for competitive growth. This is especially important, as Economic Zones want to raise production standards and ensure global competitiveness. The report provides insights into other qualification frameworks, particularly from Germany and the EU, and outlines methods to

provide career progression with transparent career paths based on standardized training frameworks. The NTVQF is going through a process of review and alignment with the EU framework, with the establishment of an eight tier qualification structure, from pre-vocational through to PHD level. This is seen as a strong step to promote quality jobs and develop aspirational career paths. This new development will result in the need to adjust training curriculums and align with industry requirements, providing an opportunity to implement an Economic Zone apprenticeship structure.

The overarching size and scale of the Economic Zones presents an opportunity to develop training platforms that are driven by the demand of their tenants. This demand driven approach creates a foundation for skills anticipation both in the mid to long term, and creates economies of scale for training.

COVID-19 Impact

The findings of this report, clearly show a significant impact of COVID-19 on the developers and investors of the eight focus Economic Zones. This impact has been felt by a lack of raw materials for construction and production, a drop in revenues and profitability and increased challenges in sourcing manpower. This impact will be felt throughout 2021, resulting in relatively limited industrial growth across the Economic Zones.

While the impact on industry is significant, the continued drive by BEZA and the Economic Zone developers will create thousands of new jobs with continued infrastructure development and construction.

The Impact of Digitalization

Globally, there is an upward trend towards acquiring skills related to data engineering, data science, data analysis, and data integration in almost all industries and the top players lead in looking for those skills through their job posts. Bangladesh job posts and skills indicate that there is much room for improvement in the data literacy domain

Demand for skills related to the most important digital strategic trends (digitalization, IoT devices, AI, robotics and automation, smart manufacturing etc.) have increased tremendously over the last year in all industries. By incorporating digital skills in the job posts, cross functional roles and multidisciplinary skills are evolving in all sectors. To follow the trends, industries in Bangladesh should focus on digital capabilities and skills like digitalization, robotics & automation, AI, and ML etc.

Some of the most important job families (production, marketing, sales, supply chain management, procurement and QA/QC) show higher future orientation year-over-year (YoY). The overall share of the future oriented skills in these job families is lower in all industries in Bangladesh

The top demanded soft skills in all industries are emotional intelligence, attention to details, strategy making, business acumen, consulting, change management, and customer orientation etc.

Importance of Core Skills

The importance of core skills is often overlooked when talking about vocational training and the industrial sector. Through a combination of investor surveys,, data analytics and future trend analysis it is clear that strong core skills are essential to the successful development of globally competitive Economic Zones. Skills such as communication, teamwork, agility, innovation and leadership are essential for career progression and in managing an ever changing economic environment. In a globalised market skilled workers must have a strong foundation to succeed.

A relatively new focus point when discussing core skills is that of Digital literacy. The ability for workers to be digitally literate, at all levels of the organization will have long lasting positive impacts. There is extensive work being done in Bangladesh to develop the ICT sector, and it is important to keep ICT connected with manufacturing and production industries.

Data Quality and Outcomes

The collection of Economic Zone data has been a challenge throughout this project. While extensive efforts were made to collect data from investors and developers, there were shortfalls in the amount, and quality of data received. This is in most part due to the lack of on ground presence of many investors and the delay in operations due to COVID-19. However when looking at the quality of responses it is also important to note, that accurate skill anticipation and manpower planning for the future will only be possible, with specific coaching, communication and commitment of investors. It is a recommendation of this report to work closely with investors to pinpoint manpower and skill demand in connection with the allocation of plots. This will provide both accurate demand planning, and enough lead time to source qualified talent.

Workforce Planning and Next Steps

The following table provides an estimate for the overall workforce planned across the eight Economic Zones outlined in this project.

This data is based on the following assumptions

- Total workforce numbers are based on the data received from developers
- The breakdown in Skill Levels is based on the investor and developer data (workforce split) and an estimation based on the different demands of each industry.
- The growth in each industry is estimated based on the data received and the overarching manpower requirements of each industry.

This data is also broken down by industry and included within the relevant sections of this report. Within each industry section, the report also outlines the current occupations defined by the Bangladesh NTVQF for each industry. With this information, it is possible to define a guideline for the number of

occupations required at each NTVQF level for each industry and subsequently define the types of skills and specific training demands.

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	4484	12296	24728	49456	94388
Semi-Skilled	L1 and L2	5806	16044	31996	63968	121966
Skilled	L3 and L4	5442	15524	30804	61872	117858
High-Skilled	L5 and L6	1320	3960	8120	16588	32210
Professional	Professional Qualifications	348	976	1952	4200	9432
Total 9 Focus Industry Sectors		17400	48800	97600	195800	373900
Other Industry Sectors		5200	28736	75522	75408	71925
Estimated Workforce		22600	77536	173122	271208	445825

This information should be cross-referenced with the specific demands of the industry and then used to develop and update the curriculum, in line with the NTVQF framework.

For professional qualifications, there needs to be a process of alignment with existing training providers to explore current levels of training and in doing so aligning expected competency outcomes. The European ESCO (European Skills Competency and Occupational) framework provides an excellent guide here and can support the process of skill and competency mapping to job roles and occupations.

Over time it is essential to bring new 'Core' skills into the existing NTVQF framework and ensure that digital skills play a role throughout the skills development lifecycle. The future skills outlined in this report are not currently catered to by the existing framework, and therefore new curriculum and courses will have to be developed over time. This report estimates that these skills will become critical to Economic Zones by 2023/2024 and will significantly impact the Skilled, Highly-Skilled, and Professional workforce.

II. INTRODUCTION

Review of current and foreseeable job skills and training needs in the EZs, presented valuable insights for creating and implementing the Training Needs Analysis.

Analysis of the current labour and training landscape across eight EZs provide a realistic basis upon which BEZA can plan, budget and direct an effective training program. The study uses a staged approach to review current and foreseeable job skills and training needs in the EZs, roles where there may be skill gaps, and the capability and intent of national training provision to address gaps. It gives a numeric demand for labour, expressed by job role and required skill level, over three planning periods: short, mid and long-term; while also providing insights into labour market dynamics, hard-to-fill vacancies and industry standard qualifications.

Attempt to successfully leverage the opportunities presented by economic zones to promote investment, growth and industrial diversification.

BEZA is endeavoring to catalyze economic development by establishing EZs in potential areas of the country. This TNA targets the following eight EZs - Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN), Japanese Economic Zone (Araihazar EZ), Abdul Monem Economic Zone (AMEZ), Meghna Industrial Economic Zone (MIEZ), Bay Economic Zone, Kishoreganj Economic Zone (KEZ), Sirajganj Economic Zone and Hoshendi Economic Zone. The targeted EZs include domestic and foreign investors, developers, service providers and regulatory authorities. Also in the target market segment are workers with varying levels of skills that affect the overall performance of the EZs.

Today's challenges can lead to tomorrow's opportunities, with the right planning, people (skills) and infrastructure.

Bangladesh is one of the world's fastest-growing economies with an annual GDP of \$249.7 billion and a growth rate of 7.86% in 2018 with a stable growth rate of more than 6% for the last five years. It is expected to be the second fastest-growing economy in the world going forward. The development in the EZs will create jobs that need specific skills sets.

Existing sectors with huge opportunities in terms of employment generation and economic growth are agriculture, ready made garments, consumer electronics, pharmaceuticals, ship building, leather, chemical and automotive industry. Major supporting sectors include transport and logistics, Information and Communications Technology (ICT), construction, hospitality and packaging.

Considering the advances in technology and communications and how it will provide opportunities for networked production. The TNA outlines a plan ahead, looking at the short, mid and long term training needs to meet on-job skill demands.

The use of ESCO & DQR to classify skills and occupations for the Training Needs Analysis.

In order to assess the education system in Bangladesh, the TNA compares Bangladesh's education system with the international education sector and standards of competence - ESCO (European Skills, Competences, Qualifications and Occupations) and German Qualifications Framework (DQR) for Lifelong Learning. It identifies the key indicators and the core skills, which are required to meet industry specific needs, while also describing the steps required to achieve global standards. This study uses these frameworks to employ a 'common language' on occupations and skills that can be used by different stakeholders on employment and education and training topics.

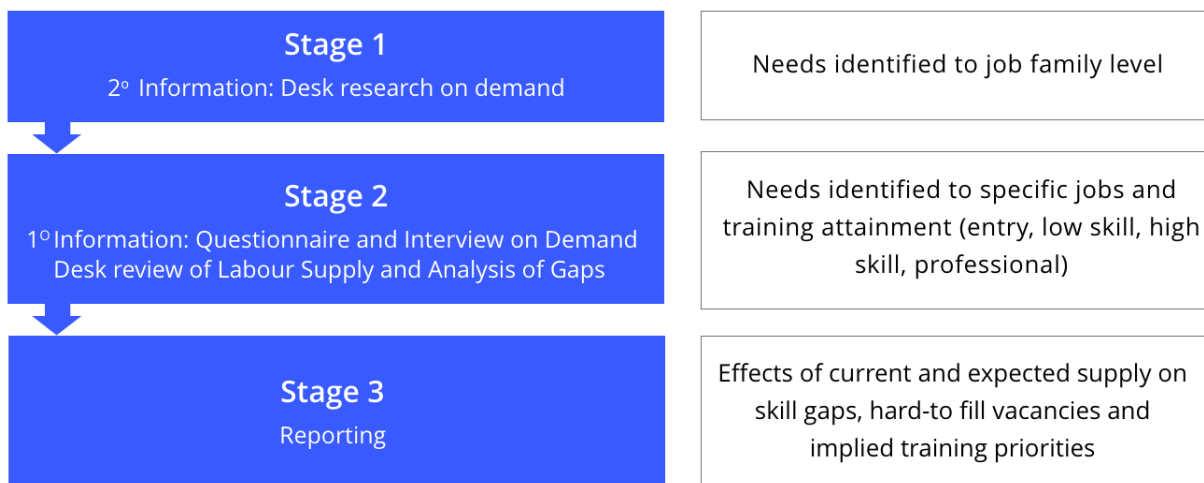
The DQR is an instrument for classifying the qualifications of the German education system. It enables appropriate evaluation and comparability of German qualifications in Europe, making it more transparent and easy to compare the 8 levels of its learning outcomes with the 8 levels of the European Qualifications Framework (EQF). The EQF is used as a translation tool that helps to make national qualifications easier to understand throughout Europe. As a national implementation of the EQF, the DQR accords due consideration to the specific characteristics of the German education system and assists to make equivalences and differences between qualifications more transparent and to use this as a vehicle for supporting permeability and mobility.

III. TNA METHODOLOGY

A structured methodology includes a systematic review of current and foreseeable job skills and training needs in the selected eight EZs. It provides a realistic basis upon which BEZA can plan, budget and direct an effective training program. The study method is designed to use insights from BEZA and key stakeholders to target research effort efficiently. Job and training taxonomies will use the multilingual classification of European Skills, Competences, Qualifications and Occupations (ESCO) because it is a complete taxonomy, and well referenced to the needs of international employers. The Bangladesh Qualification Framework and qualifications which exist on it will then be mapped onto ESCO.

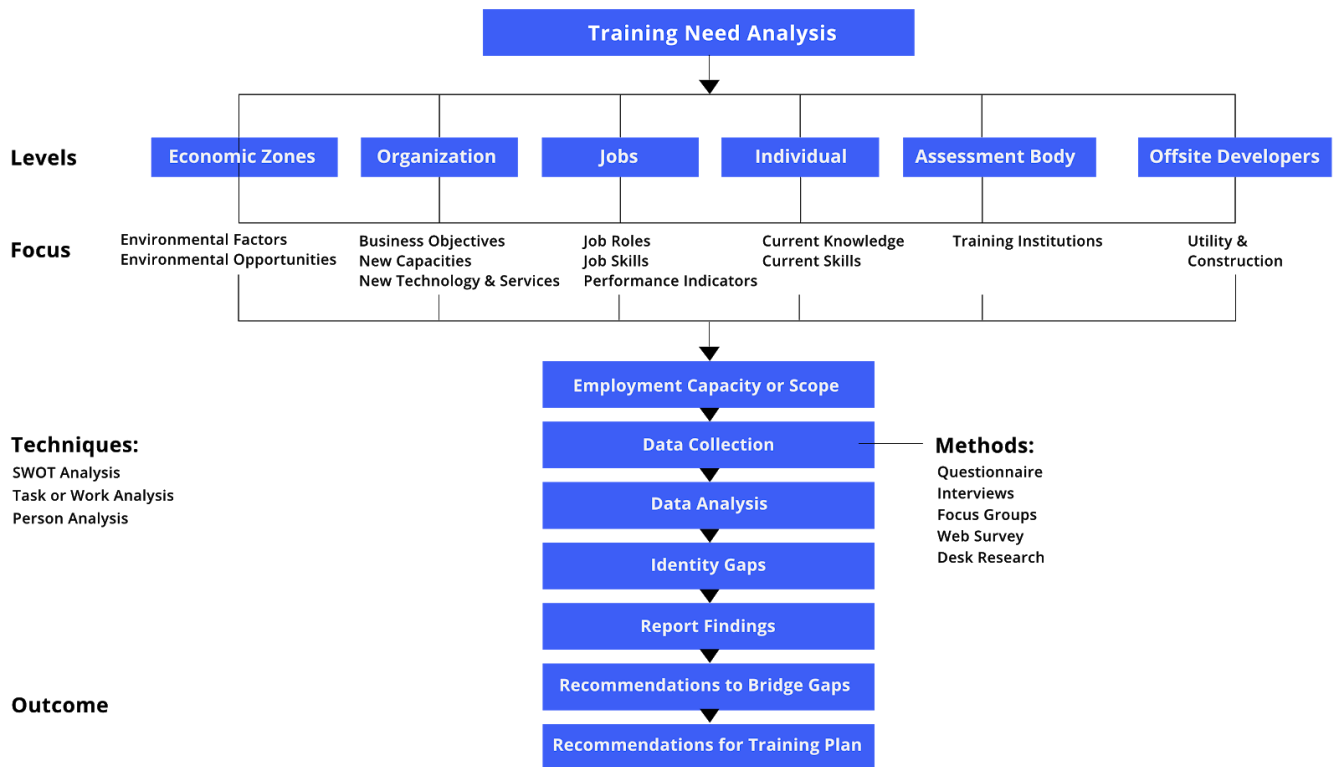
TNA Staged Approach

The first phase outlined the structure or direction of developing Bangladesh’s economic zones and sustaining its competitiveness over the next two decades. The study by our team members in Bangladesh and internationally (remote workers) provided information on the labour market landscape, broad investors and tenant needs, nature of jobs, skills and training supply; focussed on the immediate geographical area of the EZs but also covering more general information on Bangladesh as a whole.



The second phase which was the demand side research included questionnaires captured information on current and future challenges in the labour force, both for operations and supply, much of which is sourced from downstream labour markets. In order to ensure the quality of data, and minimize gaps, the questionnaires were followed with a range of interviews, workshops, and site visits to ensure the completeness of data.

Research Framework



Interview with BEZA was conducted to discover Policy and Strategic decisions regarding skilling ambition of EZ's. To understand the financing models for the forthcoming skill development plan and discover the mission and vision of BEZA over the next five years.

Questionnaires and interviews with investors were conducted to understand EZ development timelines, industry focus, skills challenges, demands and gaps, perceived future trends, current reliance on local supply chains, expected skill development within local supply chains and a view to the future relationship with local supply chains in and around Bangladesh.

Interview for the Training Board and Authorities provided information on current training and skills initiatives, commercial and operational models, extent of interaction (current and future) with EZ and local supply chains and future skill trends.

Interview with Developers gave information on important industries and skill sectors, current sources of manpower, recruitment practices and trends, gaps and shortages, training and development plans, local workforce skills and development.

Labour Supply and Skills Gaps

Insights about the global labour market - its workforce development needs and upskilling potential, was attained by crawling through global employment data using smart algorithms and data analytics. Data was collected and analysed from a wide-range of web sources including, career websites and official statistics offices to publications and social media platforms.

Globally Crawled Data + Smart Algorithms = Access to Valuable Global Insights

Methodology and Approach



Web Crawling

Source websites:

- Career websites
- Xing, LinkedIn
- Official Statistics Offices
- Public Domains
- Congresses & Publications
- Patents

Data Enhancement

Extraction of data with the skill HRForecast Skill Catalog:

- Skills
- Job roles
- Professional area
- Location
- Seniority

Data Analytics

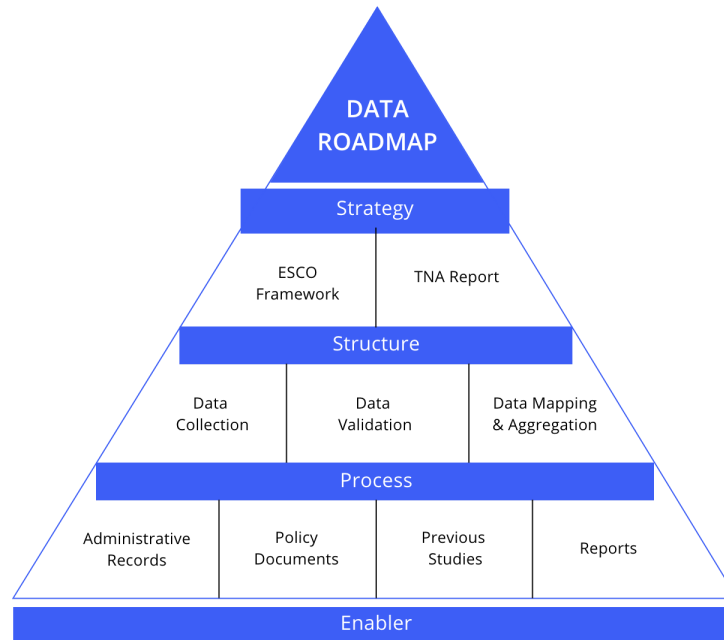
- Analysis and evaluation of future workforce trends and skills
- Insights into future job roles and skills
- Visualisation of the results and hand-over to client

The combination of local Bangladesh data and international comparative market analysis, provides a detailed overview of current labour supply and future demand. The study then mapped these findings against existing skilling initiatives and investments to pinpoint both current and future labour and skilling gaps. The TNA examines trends of global value chains, taking into account changes in skill requirements over time, based on technological, and globalized markets. The skills data assimilated was analysed and tagged with respect to its future importance (decreasing/stable/ increasing). This rating is based on the occurrence of skills in continuous labor market demand analyses. And, if skills are increasingly demanded over time or connected to at least one trend, they are considered to be 'future oriented'.

As the job or skills needs varied from one stakeholding group to the other, data required was collected using an integrated approach based on data source and number of people studied to classify the methods of identifying training needs. The nature of the needs and its extent was determined by utilising quantitative data and the extent of the needs.

The TNA examined multiple data sources, classified into:

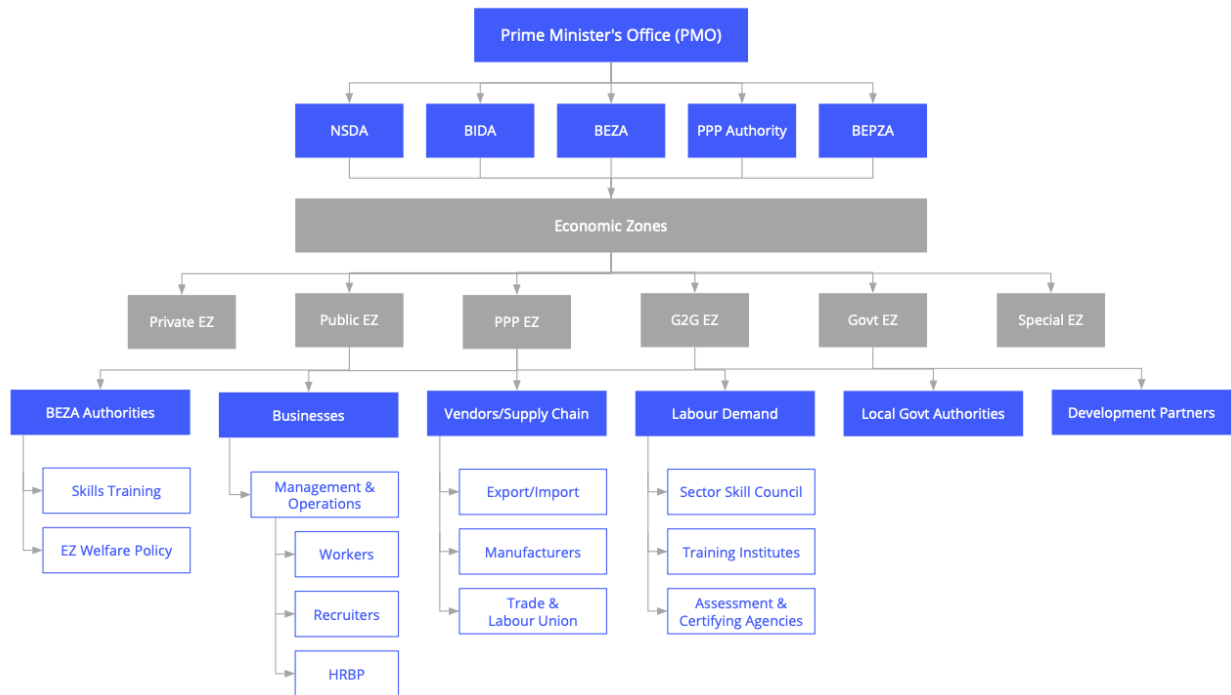
- **Primary data:** collected through web surveys or questionnaires, interviews and workshops provides data directly from the stakeholders affected by the respective need.
- **Secondary data:** involved studying existing data (administrative records, policy documents, news reports, previous studies) collected through desk research.



An **opportunity oriented needs assessment** slates the future developments of the EZs and the prospective careers of individuals who will work in them.

Identifying the levels of the present situation and the gaps between the present status and desired status determines the organisational capacities that are required (for each of the sectors) to meet their current demands of performance and the needs arising from any anticipated changes.

Stakeholder Map



The stakeholder map will reveal everyone whose activity is related to the Economic Zones while helping to describe their interests and mutual relations. The organisations involved are:

- BEZA: Bangladesh Economic Zones Authority
- BIDA: Bangladesh Investment Development Authority
- NSDA: National Skills Development Authority
- PPP Authority : Public Private Partnership Authority
- BEPZA : Bangladesh Export Processing Zone Authority
- HRBP: HR Business Partner

To facilitate training needs of modern economic zones, this study considers private, public, Public Private Partnership (PPP) and Government to Government (G2G) economic zones. Followed by a range of stakeholders from vendors and suppliers to sector skills councils.



A BRIEF REVIEW OF BANGLADESH LABOUR MARKET

IV. A DETAILED SNAPSHOT OF THE BANGLADESHI LABOUR MARKET

1. Drivers of Changes in Labour Market Demand

Bangladesh is one of the world's fastest-growing economies with an annual GDP of \$249.7 billion and a growth rate of 7.86% in 2018 with a stable growth rate of more than 6% for the last five years. It is expected to be the second fastest-growing economy in the world going forward. Its population includes 80 million people younger than 25 years old and a large trainable talent pool (500,000 graduates annually)^[1].

Bangladesh has made rapid strides in developing a thriving ecosystem of startups and emerging companies dabbling in advanced technologies. However, the pace of job creation has fallen in recent years. Overall worker productivity in Bangladesh, measured by value added per worker, is half that of the South Asian average, less than 40 percent of the lower-middle income country average, and less than a tenth of the global average.

There are a number of Labour Market Drivers that are currently bringing about change to the Bangladesh labour market. This report analyzes the following key drivers:

1. Access to Quality Jobs
2. Shifting Demographics / Dynamic Workforce
3. Role of Female Workforce
4. Rise of Individual Choice
5. Technology Impact
6. Data Driven Recruitment
7. Competition and Globalization
8. COVID-19's impact on the economy

Further details on the drivers of changes in the labour market can be found in the Annex - 1.

1. HFS Research. Bangladesh Emerges as a Distinctive Digital Hub for Emerging Technologies. (January 2019 Phil Fersht, CEO and Chief Analyst Saurabh Gupta, Chief Strategy Officer Anirudh Pillala, Director)
http://lict.gov.bd/uploads/file/strategic/strategic_5ca49063b6714.pdf

2. Factors Affecting Labour Market Supply

Bangladesh has enjoyed robust growth since the early 2000 but the impact on employment has been less positive. Instead, the economy is still beset by underemployment, widespread informal employment, low productivity and earnings, and poor working conditions.

These factors reduce the impact growth has had on poverty reduction and also on the supply of labour.

Few important trends include:

- With a total population of approximately 164 million inhabitants, Bangladesh accounts for nearly 2.1 % of the world's population. The demographic profile of Bangladesh is highlighted by a large, young digital-savvy population with about 80 million people under the age of 25, over 50% of its total population having access to mobile services and growing trainable talent pool with 500,000 graduates annually entering the job market^[1].
- The proportion of workers employed in the informal sector—where high underemployment, low earnings, and poor working conditions are common—actually rose to 87.1% in 2013, from 78.4% in 2005–2006. Informality—even among wage employees—is commonplace, with less than 40 percent of wage employees having a written contract^[2].
- Widening gender gaps – although Female Labour Force Participation (FLFP) has risen substantially, the level remains far below that in East and Southeast Asian countries. Currently, it stands at 36.4% and remains below both the lower-middle income country average (39 percent) and the middle-income country average (48 percent). Moreover, progress on female LFP has reversed recently among urban females, with their LFP rate declining from 36 percent in 2010 to 32 percent in 2016. Women also have less access to better quality jobs than men, with 39 percent of working women in unpaid work, as opposed to 5 percent of working men. A larger share of working females is employed in agriculture than of men, and women have a much smaller presence in services.
- Labour force education levels are also low especially the share of workers with tertiary education. Likewise, a very small proportion of the labour force (only one in a thousand) had technical or vocational qualification in 2010. This stems directly from the very low enrollment in technical and vocational education of only 2.43% of secondary enrollment, compared with 6.31% in Malaysia and 18.41% in China. In addition, males continued to have significantly higher tertiary education than females^[3].
- In recent years, youth unemployment rates have spiked, while those for older workers have remained stable; this suggests that youth may be disproportionately affected by the pressures associated with the recent slowdown in job creation. School-to-work transitions for youth continue to be a challenge, as better educated youth, with probably a higher reservation wage, enter a labor market where quality jobs are scarce.
- While Bangladesh has successfully created manufacturing jobs particularly in textiles and garments, it has been unable to create a large pool of jobs in industries outside ready-made garments. While other manufacturing sectors are growing rapidly to meet increasing domestic demand, large-scale, quality job creation will require greater export orientation among the non-RMG sectors. Some sectors—such as footwear, leather products, and pharmaceuticals—have improved their export performance, but Bangladesh has failed to diversify its export basket significantly and has not emerged as a major global exporter in any new sector over the last decade. Services sector

employment growth has been steady but modest; and higher-value, tradable services are still small scale.

- International migration has been and likely continues to be a channel for many workers to find better quality jobs, despite high migration costs and risks to worker safety. On average, 544,000 Bangladeshis a year have migrated abroad temporarily over the past decade. In 2016, emigration rose to 750,000.

Some implications:

- The key challenge that needs to be addressed is beyond the creation of more jobs. It is about transfer of workers from low to higher productivity jobs and sectors.
- Improvement of FLFP is critical. At the same time, women must be matched with better quality jobs.
- Several supply-side factors have contributed to constraining economic diversification, some of which relate to employment:
 - (i) a shortage of skilled workers,
 - (ii) technological bottlenecks, and
 - (iii) lack of entrepreneurship and management skills.

Thus, although labour in Bangladesh is abundant, a shortage in skilled workers is perceived to be a major constraint on manufacturing production. The shortage is particularly acute for medium-scale, export-oriented enterprises.

- Importance of upgrading education and skills so that people can be productively employed at home instead of being forced to find quality jobs overseas. This puts an even greater stress on the already dwindling supply of skilled workers at home. This clearly points to an urgent need to raise the quality of all levels of education, increasing enrollment in technical and vocational education and training, and addressing the issue of skills mismatch.

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1. World Bank Report. Jobs Diagnostic Bangladesh. (Accessed on 15 December 2020) <http://documents1.worldbank.org/curated/en/790771507299849471/pdf/120295-NWP-v1-P155918-28p-bangladeshjobsdiagnosticoverview.pdf>
 2. Asian Development Bank. Bangladesh looking beyond garments employment diagnostic study. (Accessed on 16 December 2020) <https://www.adb.org/sites/default/files/publication/190589/ban-beyond-garments-eds.pdf>
 3. Bangladesh Bureau of Statistics. Quarterly Labour Force Survey. (Accessed on 18 December). <http://data.bbs.gov.bd/index.php/catalog/200>

3. High-Level List of Industries & Their Implied Job Family Needs

Bangladesh's journey on the path of economic reforms will be transformed by its fastest growing economies. Development in economic zones will create jobs that will need an educated workforce across a range of industries. Below are the list of the existing sectors with potential opportunities in the future in terms of employment generation and growth:

Agriculture accounts for approximately 19% of GDP and employs 45% of the total workforce. Main crops include rice, tea, jute, wheat, sugarcane, tobacco, spices, and fruits.

Industry represents 31% of GDP and employs about 20% of the total workforce. RMG is by far the largest industry, accounting for more than 80% of the country's total exports. Other industries include paper, leather, fertilizers, metals, and pharmaceuticals. Ship building is a growing industry with a lot of potential.

Services account for 55% of GDP and employ 40% of the total workforce. Major sub-sectors include wholesale and retail trade, transport and logistics, financial services, etc. Microfinance and ICT are important sub sectors. The TNA will be conducted for the following primary and supporting industries^[1].

Primary Industries:

1. - Ready Made Garments (RMG) / Apparel
2. - Agri-Business, Food & Meat Processing
3. - Consumer Electronics
4. - Automotive Industry
5. - Leather & Leather Goods
6. - Ship Building
7. - Pharmaceuticals
8. - Steel and Steel products
9. - Chemical

Supporting Industries:

10. Transport and Logistics
11. Information and Communications Technology (ICT)
12. Construction
13. Hospitality
14. Packaging

Considering the advances in technology and communications and how it will provide opportunities for networked production. The TNA will place emphasis on downstream supply chains or economic activities that are part of the EZs, as it is a source of business for entrepreneurs and competitiveness for investors.

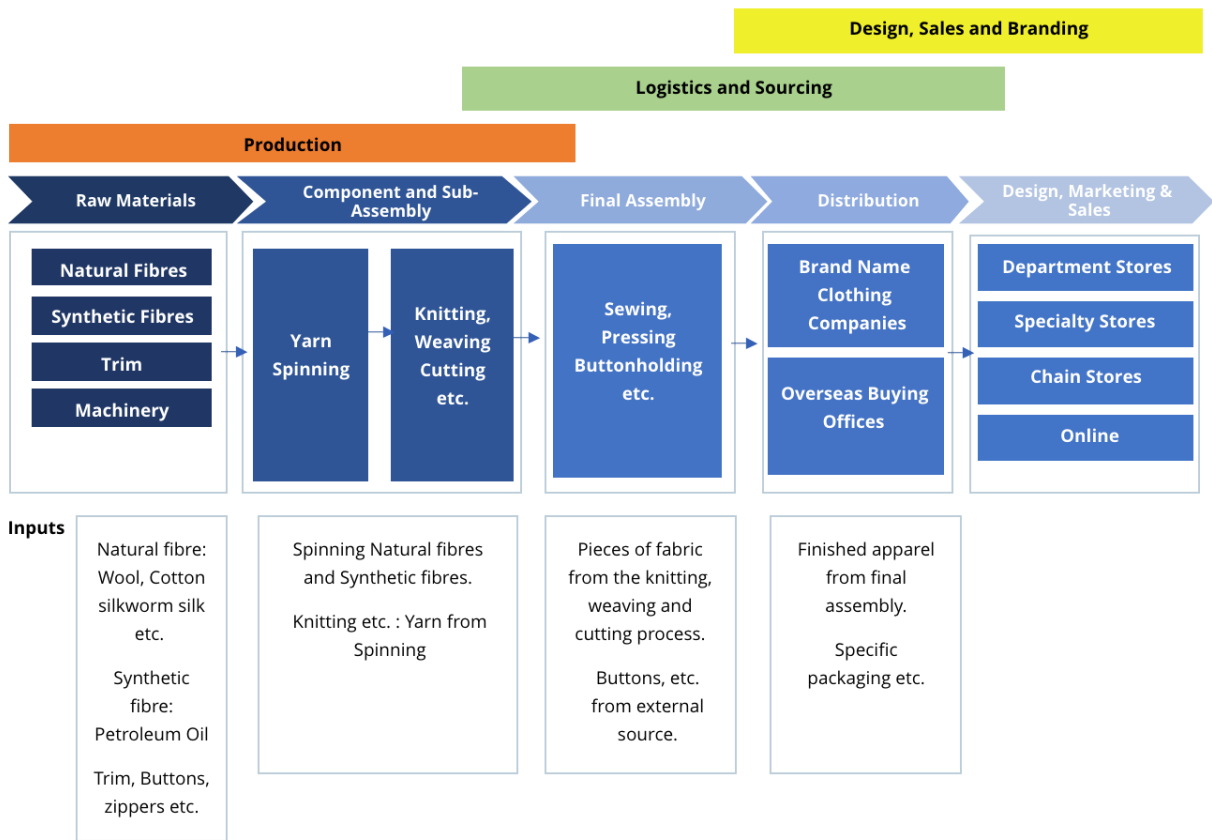
Share of GDP by sectors and total employment^[2]

Sector	Share in GDP in 2013 (%)	Share in total employment in 2013 (%)
Agriculture, forestry & Fishing	19.75	45.1
Mining & Quarrying	1.26	0.4
Food & Beverage	1.64	2.19
Tobacco	0.85	0.32
Textiles & garments	7.2	8.35
Leather & footwear	0.34	0.16
Wood & Wood products	0.33	2.27
Printing and Publishing	0.35	0.28
Chemicals, rubber & plastic	1.34	0.39
Petroleum & petroleum products	0.00	0.01
Metal & mineral products	1.32	1.20
Electrical machinery	0.12	0.17
Other manufacturing	5.57	1.08
Construction	9.25	3.69
Electricity, gas, water & waste management	1.72	0.34
Trade, hotel & restaurants	14.96	14.45
Transportation, storage & communications	10.70	6.45
Financial intermediation, real estate & other business activities	8.90	0.77
Public administration & defence	2.91	1.32
Education	2.83	3.23
Human health & social work activities	2.45	1.20
Other service activities	6.21	6.62
Total	100.00	100.00

Share of unskilled workers as a percentage of sectoral employment^[3]

Rank	Sector	Share of unskilled workers (% sectoral employment)
1	Agriculture, forestry & Fishing	99.9
2	Mining & Quarrying	94.3
3	Food, Beverage & Tobacco (including food processing)	66.7
4	Textiles & RMG	96.8
5	Leather products & footwear	99.5
6	Wood products & cork (including jute)	96.2
7	Pulp, paper & services	99.7
8	Fuel products	98.8
9	Chemicals products (includes pharmaceuticals)	97.4
10	Rubber & plastic	84.7
11	Other non-metal mineral	96.4
12	Metal products	51.5
13	Non- electrical machinery	86.7
14	Electrical specialised equipment	89.5
15	Transport equipment	65.4
16	Other manufacturing	84.7
17	Electricity, gas & water	73.8
18	Construction	99.5
19	Motor vehicles trade & services	94.5
20	Wholesale trade	58.1
21	Retail trade	81.9
22	Hotels & restaurants (including tourism)	92.8
23	Inland transport	96.7
24	Water transport	93.8
25	Air transport	98.1
26	Auxiliary transport services	95
27	ICT & telecommunications	92.5
28	Financial intermediation	41.1
29	Real estate activities	34.9
30	Business related services & activities	64.7
31	Public administration	58.4
32	Education	5.9
33	Health & social work	33.3
34	Social & personal services	80.4
35	Household with employed persons	100

Further, value chains for each sector should be analysed for arriving at the major processes based on which the broad job families may be extracted. For example, the textile sector could be analysed as follows:



As per ESCO (European Skills, Competences, Qualifications and Occupations) classification, the sub sectors and job roles for the top 8 sectors in Bangladesh could be mapped as follows:

The below is not an exhaustive list, only an indicative one which would be vetted and verified during the course of the TNA.

Sl. No	Primary Industries:	Industry Description	Job Family Needs (Examples)
1	Ready Made Garments (RMG) / Apparel	Includes Woven, Knitwear and Woolen finished products. Also includes RMG Accessories companies that manufactures zippers, buttons, labels, packaging materials etc.	Quality Assurance Chemical & Mechanical Engineering Maintenance
2	Textiles	These are inputs for the RMG industry and includes spinning, weaving, knitting, dyeing, knit-dyeing, finishing, sewing thread etc	Quality Assurance Chemical Engineering
3	Agri-Business, Food & Meat Processing	Agri-input sectors like seed, fertilizer, pesticide, irrigation & farm machineries etc. Post-Harvest processing like edible oil, rice, sugarcane, potato, fruits & vegetables & spices, dry foods, snacks etc.	Quality Assurance Chemical & Mechanical Engineering Management
4	Consumer Electronics	Manufacturing and assembling of television, refrigerator, air conditioner, kitchen appliances and other home appliances and also mobile phones (handsets) and their parts	Quality Assurance Maintenance Chemical Engineering Mechanical Engineering
5	Automotive Industry	Manufacturing and assembling of private passenger vehicles like two wheeler, sedan, SUV and commercial vehicles like autorickshaw, bus, truck, van, pickup, microbus including related automotive parts and accessories.	Quality Assurance Maintenance Chemical Engineering Mechanical Engineering Technicians
6	Leather & Leather Goods	The industry has primarily four categories of products like processed leather (through tanning & finishing), footwear & footwear components, leather accessories, leather goods (bags, wallets ,belts, accessories, etc)	Quality Assurance Chemical & Mechanical Engineering Materials Management
7	Ship Building	There are more than 200 shipyards and workshops in Bangladesh, most of them are privately owned shipyards. Out of these shipyards, approximately 70 percent are located in and around Dhaka and Narayanganj along the side of the river bank of Buriganga, Shitalakha and Meghna.	Quality Assurance Electrical Engineering Construction Engineering Logistics Warehousing
8	Pharmaceuticals	Manufacture of pharmaceuticals is now one of the largest capital-intensive white-collar industries in Bangladesh. Bangladesh enjoys comparative advantage in the sector, thanks to its cheap labor and raw materials, a favorable World Trade Organization (WTO) regime and adequate supply of skilled manpower. Around 97 per cent of medicines are produced locally while imported medicines mainly belong to hi-tech genres. Bangladeshi pharmaceuticals also flourished through export in 147 countries, including developed ones. The industry produces different categories of generic drugs covering all major therapeutic classes and dosage forms. Along with regular forms like tablets, capsules and syrups, Bangladesh also produces specialized products like HFA inhalers, CFC inhalers, suppositories, nasal sprays, injectables, IV infusions, anti-cancer products, insulin, vaccines, antibiotics etc.	Quality Assurance Maintenance Chemical Engineering Mechanical Engineering Technicians Materials Management

Supporting Industries:			
9	Transport and Logistics	This industry is core to the development of Bangladesh, both in terms of export and import. Transport and Logistics play an important role in securing investment and development of the majority of industry sectors, and will play an important role in the development of EZ's	Supply chain analysis Logistics management Transport planning Cargo operations Drivers of freight carrier and delivery vehicles
10	Information and Communications Technology (ICT)	ICT is increasingly important across industry segments. As digitization plays a major role in the development across industry sectors. ICT also impacts cross functional sections within different industries, from manufacturing, logistics, administration etc.	Business Analysts Sales & pre-sales managers Data scientists Network & system engineers
11	Construction	Construction is a foundation industry that will enable EZ's to develop and create the infrastructure required to attract investment and compete on an international scale.	Civil Engineering Quality control Electrical Engineering Mechanical Engineering
12	Hospitality	As EZ's start to attract industries and grow in size, the need to provide hospitality services will increase. From housing to catering and support services. This will have an impact across EZ's and enable primary industries to develop	Hospitality Trades Catering Restaurant operations Hotel and hostel operations and maintenance

Further details on job families for the eight EZs can be found in the Annex - 3.

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1. Economic Dialogue on Inclusive Growth (April 2017, Selim Raihan)
<https://asiafoundation.org/wp-content/uploads/2017/05/Bangladesh-Economic-Dialogue-on-Inclusive-Growth-Policy-Brief-No-1.pdf>
 2. Share of GDP by sectors and total employment. Economic Dialogue on Inclusive Growth (April 2017, Selim Raihan)
<https://asiafoundation.org/wp-content/uploads/2017/05/Bangladesh-Economic-Dialogue-on-Inclusive-Growth-Policy-Brief-No-1.pdf>
 3. Share of unskilled workers as a percentage of sectoral employment. Economic Dialogue on Inclusive Growth (April 2017, Selim Raihan)
<https://asiafoundation.org/wp-content/uploads/2017/05/Bangladesh-Economic-Dialogue-on-Inclusive-Growth-Policy-Brief-No-1.pdf>



**KEY SURVEY
FINDINGS &
ECONOMIC
ZONE FOCUS**

V. KEY SURVEY FINDINGS: ECONOMIC ZONE

In alignment with BEZA, surveys were created to address two key stakeholders groups:

1. Developers of Economic Zones
2. Investors in Economic Zones

The survey participant data was shared by BEZA through their own sources. With great support from the BEZA team, surveys were distributed to all 8 EZ developers and 186 investors across all Economic Zones.

Snapshot Developer Survey

Responses were received from the majority of the eight Economic Zones, both from survey responses, to site visits, in-person interviews and phone conversations.

All Economic Zones reported a significant negative impact in their operations as a result of COVID-19. This has pushed all developers back significantly when it comes to allocating plots to investors and as a result the operationalization of factories.

This has led to a delayed demand in workforce development. It is estimated that there will be 9,600 employees active within the eight Economic Zones in 2021. What is important to note is that over 90% of these workers are already working for factories that are operational, predominantly in the Meghna Economic Zone. This leads to a limited demand of approximately 600 new workers across the eight Zones in 2021.

Total Workforce Strength as per Developer Feedback

	BSMSN	KEZ	Bay EZ	AMEZ	Sirajganj EZ	MIEZ	Hosendi EZ	JEZ	Total
2021	8000	200	500	400	0	8000	500	5000	22600
2022	20000	2036	1000	2000	30000	9000	1500	12000	77536
2023	30000	3122	1500	5000	100000	11000	2500	20000	173122
2024	40000	4208	2000	8000	150000	13500	3500	50000	271208
2025	80000	4825	2500	14000	250000	15000	4500	75000	445825

There is a project ramp up in growth of the Economic Zones in 2022. Take for example Sirajganj Economic Zone that expects to increase its workforce to over 30,000 in 2022.

Without question the biggest workforce requirements come from BSMSN, with a huge workforce projected to develop over the next 10 years. As mentioned Sirajganj also plays a major role with an estimated workforce of 250,000 by 2025.

From an industry perspective, there is a broad representation across the zones. As predicted there is a focus on RMG, automotive parts, agro-business and pharmaceuticals. However there is also a focus on packaging and plastics and a relatively limited focus on shipbuilding and chemicals. The data shows that

there is a close relationship between packaging and pharmaceuticals and chemicals, with less focus on manufacturing.

The data outlined that in general there would be challenged to find the following skilled workers:

1. Production Line Worker
2. Mechanic
3. Chemist
4. Engineer

From a core skill perspective, language and literacy were seen as key challenges.

A number of vocational training schools were outlined as potential manpower sourcing areas.

Vocational Schools Outlined by Developers

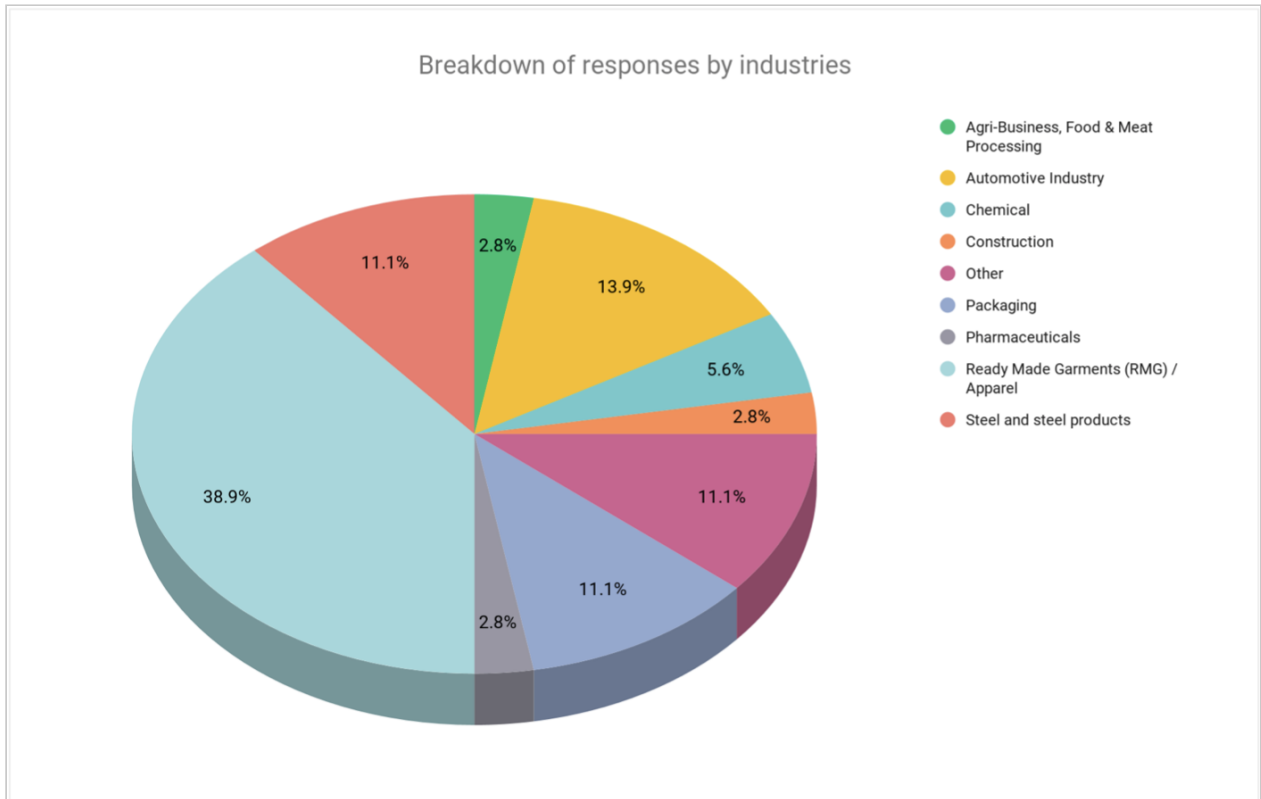
Institute Name	
Gazipur Govt. Technical School & College	International Islamic University of Technology
Engineering Staff college	Bogura Polytechnic Institute
Bangladesh University of Engineering & Technology (BUET)	Borak Polytechnic Institute
Sirajganj Polytechnic Institute	Sheikh Fazilatuneha Mujib Mohila Technical Training Center
Bangladesh Industrial Technical Assistance Center (BITAC)	Bangladesh University of Textile
North South Model Technical School & BM College	Tangail Polytechnic Institute
Bangladesh-Korea Technical Training Center	Bhawal Polytechnic Institute
Bangladesh Agricultural University	HEED Technical Training Center
Pabna Polytechnic Institute	Dhaka University of Engineering & Technology (DUET)
UCEP Mirpur Technical School	Sirajganj Fisheries Institute
Hafiz Ebna Fakir Fazlur Rahman Karigari College	Technical and Vocational Institute, Munshiganj
Bangladesh German Technical Training Center	

All developers are eager to source workers locally, however also outlining that there will be a need to look for skilled workers from other parts of Bangladesh as well as overseas, with a focus on India.

Further details about each EZ can be found in the Annex - 2.

Snapshot Investor Survey

Responses were received from 38 Investors, covering 7 Economic Zones. The investors represented a total of 9 different industry sectors, with the major industries represented being RMG, Automotive, Packaging and Chemical.



76% of investors are not yet operational, with over 50% citing delays because of the COVID-19 pandemic. Delays are particularly related to a delay in sourcing raw materials for both construction and operations.

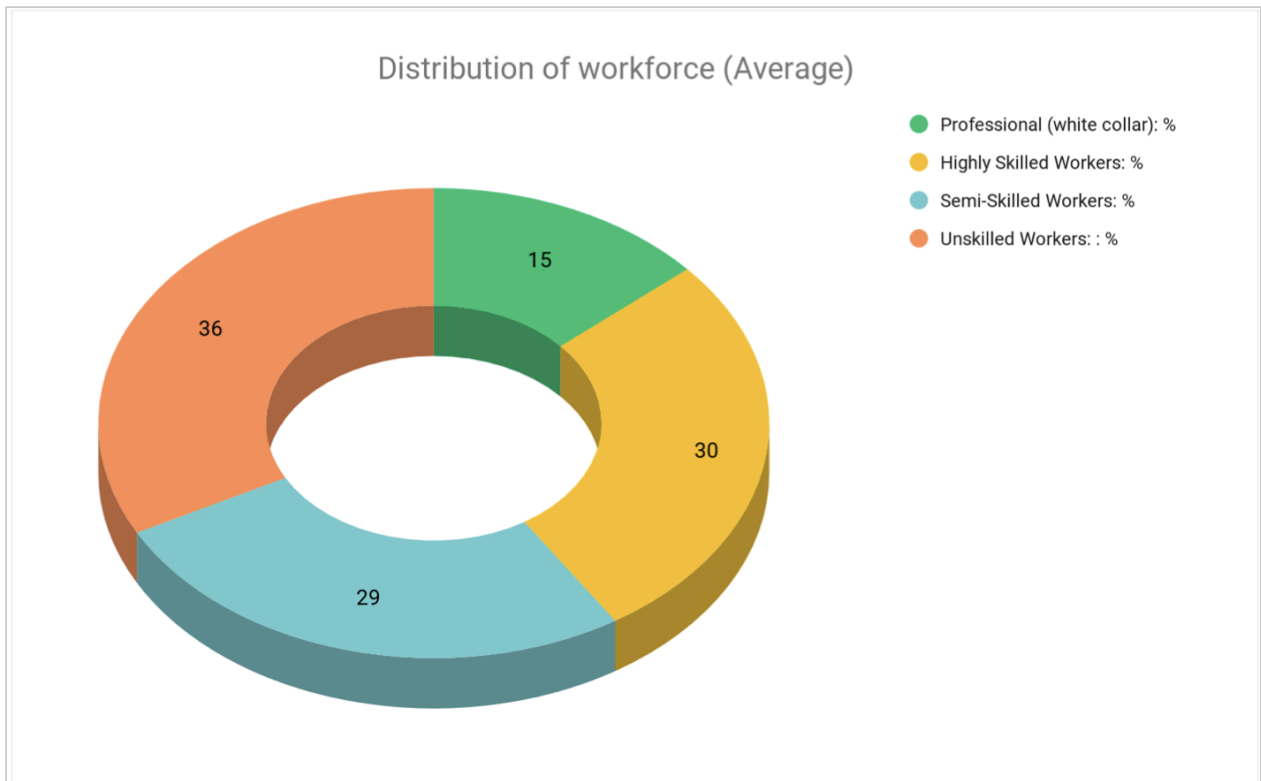
On average the projected workforce growth across the Investors is 130% over the next 5 years. Rising from 266 in 2021 to 613 in 2025.

From a labour demand perspective, the investors outlined the following distribution of workforce demand, broken down by Professional, High Skill, Semi-Skilled and Unskilled workers. This provides an interesting insight into the broad spectrum of skills required in the startup and operational phases of Economic Zone businesses. A snapshot of all investor surveys shows that the top 5 skill shortages will come in the following job roles:

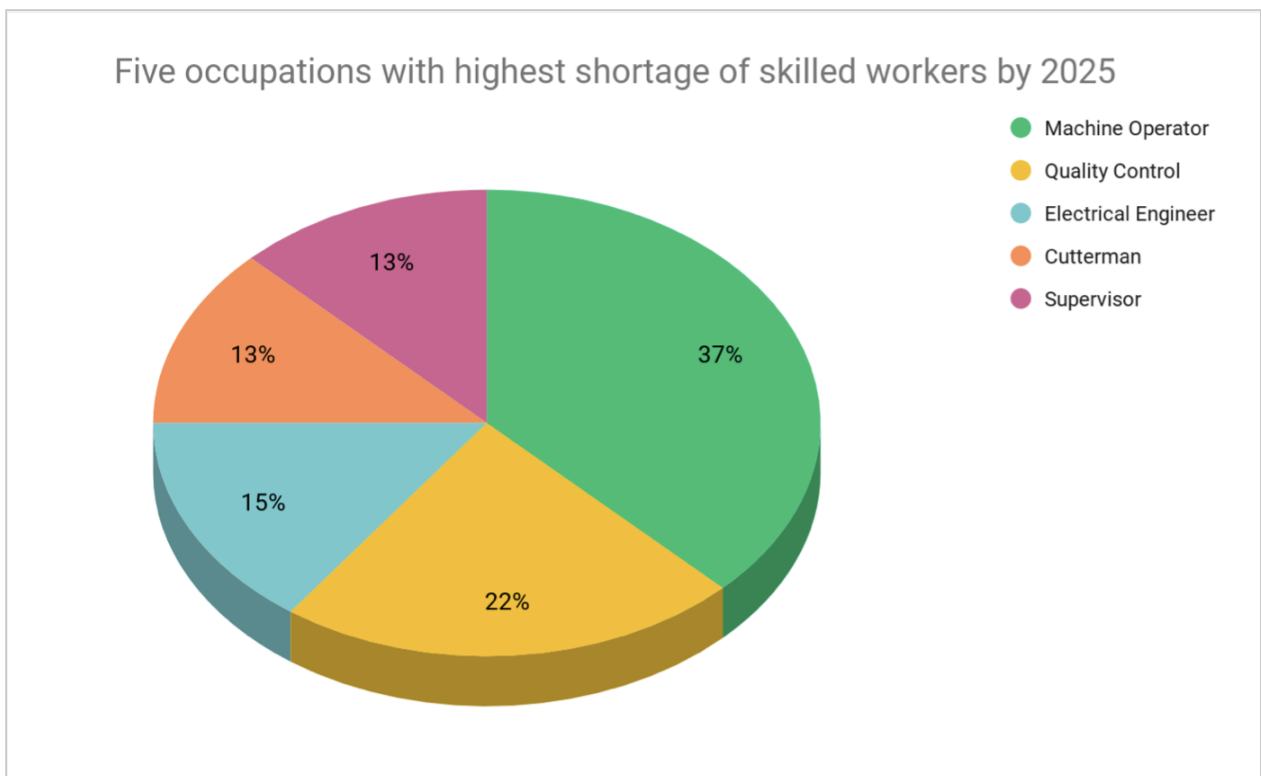
1. Machine Operator
2. Quality Control
3. Electrical Engineer
4. Cutterman
5. Supervisor

And, 63% of respondents have the capacity to train and develop their own talent pool.

Projected Workforce Profile for the next five years



Five occupations with highest shortage of skilled workers by 2025



COVID-19 Impact

As mentioned, 18% of investors are operational across the survey responses. This also varies widely based on the Economic Zone.

According to the data, 78% of investors report a negative impact as a direct result of COVID. This is primarily due to a shortage in raw materials needed for both construction and operation.

58% of respondents also outlined the need for new skills as a result of COVID. The majority of these skills are digital in nature, with the top three being, Digital Engagement (marketing), Project Management and IT.

1. Bangabandhu Sheikh Mujib Shilka Nagar (BSMSN)

BSMSN is a mega Economic Zone project that is 100% owned by the Government of Bangladesh. At over 30,000 acres, it is by far the largest Economic Zone under the BEZA structure. Over the next 15 years, the zone expects to employ in excess of 1.5 million people across a range of different industries, and economic sectors, both upstream and downstream.

The expected industry focus of BSMSN includes the following.

- Garments & Garment Supporting Industries
- Agro-products and agro-processing products
- Integrated Textiles
- Leather and leather products
- Shipbuilding
- Motorbike Assembly
- Food & Beverage
- Paint & Chemical
- Paper & Products
- Plastics
- Light engineering (including auto-parts and bicycles)
- Pharmaceutical products
- Power
- Solar Park

Site Visit & Current Status

A visit was conducted at BSMSN site on Tuesday, February 10, 2021. After a slumber due to COVID-19, the whole area, particularly the Mirsarai part of the project is buzzing with lots of infrastructure development related activities. A 150 MW by Power Plant is under construction by B-R Powergen Ltd, a Government company. The Power Plant is likely to go into operation shortly. The work of two Chinese infrastructure development companies; i.e. China Harbour Engineering Company Ltd and China Civil Engineering Construction Corporation are very visible. A 10m super dyke wall is under construction at the western boundary of the project to prevent flooding of the area by sea water. Besides, a significant amount of land-filling activities and construction of roads, bridges and culverts are also in progress.

A good number of investors have already started their activities at BSMSN. Among them Zhuzhou Jinyuan Chemical Industry Ltd, a Chinese chemical manufacturing company has already completed their construction and their launching of operations has been deferred due to COVID-19. Construction works of manufacturing facilities of Asian Paints Ltd, Modern Syntex Ltd. (TK Group), Arman Haque Denims Ltd, McDonald Steel Building Product Ltd, Bangladesh Auto Industries Ltd (Electric car manufacturing project from Mango Teleservice), A project of Bashundhara Group are in progress. Companies like Berger Paints Bangladesh Ltd, Healthcare Life Science Ltd. (a venture of Healthcare Pharmaceuticals Ltd), Bangladesh Steel Re Rolling Mills Ltd (BSRM), PHP Steel Works Limited, Samuda Food Products Ltd are also in different stages of their development of their facilities. Activities of Bangladesh Garments Manufacturers & Exporters Association (BGMEA), who are setting up a 500-acre "BGMEA Garments Village" and Bangladesh Export Processing Zone Authority (BEPZA) who have been allotted an area of 1150 acres to set up export-bound industries are also visible.

The BEZA Administrative building is almost at the final stage of its construction. And a police camp has also been set up inside the BSMSN area.

The investor survey data shows that BSMSN is predominantly in the early stages of development with only one factory in the startup phase of operation. The investor survey was completed by companies from a broad range of industries including:

- Ready-Made Garments
- Automotive
- Steel
- Packaging
- Chemical
- Construction

The majority of respondents are from the RMG sector (46%).

COVID-19 Impact

Over 70% of surveyed investors have been negatively impacted by COVID-19. This negative impact comes both in terms of delay in operations, as well as a downturn in business performance. Overall there is clearly an overarching delay across the surveyed investors.

Skill Requirements

Economic Zone investors expect there to be (on average) an equal workforce distribution between, highly skilled, semi-skilled, and unskilled workers. This provides an opportunity to establish a method of on the job training that can result in progressive career development. As outlined later in the report, the importance of core skills will also play a major role in ensuring growth.

Trends Observed

The majority of investors are in the process of securing land and/or construction. As such, much of the skill demand data provided in the surveys focuses on the expected labour force needed to begin production. Therefore the trend shows a high level of operative roles and quality assurance across the different production areas. For example 'operators' of various production tools are in high demand.

Most companies expect to source their manpower from within Bangladesh, and where possible from the surrounding area. This provides an excellent opportunity to build competency-based skilling programs that can support the growth of the BSMSN industries.

From a recruitment perspective, the majority of manpower sourcing is currently managed through media advertising and internet channels. Referrals also play a significant role in recruitment. This provides an opportunity to centralize recruitment drives and build demand across the EZ.

Investors also expect their workforce to more than double in size over the next five years. This expected growth, when coupled with the continued expansion of BSMSN provides enormous potential for skilling programs at all levels, to manage the increase in workforce demand.

When asked about future skill requirements, and perceived skilling challenges, there was a clear tendency towards digitized roles, with most expecting digitalization to play a major impact on the skill requirements of their workforce. This includes both updates to processes and tools as well as core skills and operations.

2. Japanese Economic Zone (Araihazar EZ) / (JEZ)

As a joint venture project based on the G2G provisions of the Bangladesh Economic Zones Act 2010, the Government of Bangladesh established a JEZ in cooperation with the Japan International Cooperation Agency in the suburb of the capital city, Dhaka.

Located in Araihazar Upazila of Narayanganj district, the land allotted for this project is 1000 acres and will be developed by Sumitomo Corporation. This EZ would be able to accommodate around 200 companies with an employment projection of 0.1 million.

Land development work is yet to start due to the Covid-19. However, the Environmental Impact Assessment and Feasibility Study of this economic zone have been completed and BEZA will start allotting plots in the Araihazar EZ by September 2021.

Suitable Industries: Agro-food, light engineering, Chemical, Automobile parts and assembly, garments and leather, pharmaceutical, plastic and plastic materials (toys)

Site Visit & Interview

A meeting was held with the Project Director (PD) of the Bangladesh Special Economic Zone (BSEZ), also known as JEZ which is a 74:26 Joint Venture between Japan International Cooperation Agency (Jica) and the Government of Bangladesh. While the PD was very cooperative, he also expressed his challenges of getting specific information from the Japanese investors about the potential investment in BSEZ. However, he mentioned a few potential investment sectors like:

- Consumer Electronics (Home Appliances)
- Plastic and Plastics Materials (e.g. Toy)
- Automobiles Parts and Auto Assembling
- Food Processing
- Pharmaceuticals
- Footwear and Leather Products
- Building and Construction Materials

JEZ project site was visited on February 15, 2021 at Araihazar Upazila under the administrative district of Narayanganj. The whole area is buzzing with lots of land development activities. Talking to the Construction Manager of the TOA Corporation, the company that is in charge of the land development project, it was learnt that the project has been significantly delayed due to COVID-19. However, the work has restarted since December 2020 and the landfilling work for the first phase is in progress at full swing. Under the first phase, landfilling work for an area of 100 hectare (approx 250 acres) is expected to be completed by October 2021.

COVID-19 Impact

The survey confirmed the negative impact of COVID-19. This negative impact comes both in terms of delay in operations, as well as a downturn in business performance. Overall there is clearly an overarching delay across the surveyed investors.

Developer Data

As the EZ is in the early stages of development, and as a result of a lack of on the ground presence, we will focus the TNA findings on relevant industry sectors and the perceived skill requirements. The developer of JEZ estimates an increase of the workforce from 5000 in 2021, to 75000 by 2025. It is expected that the workforce of 5000 will increase to 12000 by the end of 2022.

Workforce projections - As per developer survey

	JEZ Economic Zone
2021	5000
2022	12000
2023	20000
2024	50000
2025	75000

The expected industry focus of JEZ includes the following.

- Chemical
- Automotive
- Agriculture
- Packaging
- Pharmaceutical
- Leather
- Steel
- Logistics
- Retail

Skill Requirements

Economic Zone investors expect there to be (on average) an equal workforce distribution between, highly Skilled, Semi-Skilled, and Unskilled workers. This provides an opportunity to establish a method of on the job training that can result in progressive career development. The EZ investors primary demands are for workers to have the skills in the following areas ICT, automobile, pharmaceutical, steel, project management, programming, IT service management and financial management

Trends Observed

The majority of investors of JEZ are not operational.

Companies expect to source their manpower from within Bangladesh and overseas, and where possible from the surrounding area. Investors expect that some of the training institutes in the vicinity could be good sources for skilled workers including, Technical Training Centre (TTC), Agricultural Institution, Vocational Training Centre, Language Training Centre and Biomedical equipment technicians. This provides an excellent opportunity to build competency-based skilling programs that can support the growth.

When asked about future skill requirements, and perceived skilling challenges, there was a clear tendency towards digitized roles, online communications and skills related to ICTs. This includes both updates to processes and tools as well as core skills and operations.

3. Meghna Industrial Economic Zone (MIEZ)

MIEZ is a Private Economic Zone, situated right beside the Dhaka-Chittagong Highway in the Sonargaon Upazila of Narayanganj district. Situated on 110 acres, this zone is developed for industrial construction and operation with leveled land and a road network. Construction of utility facilities like electricity, gas, and water are in progress.

MIEZ is well-connected by road, river, rail, and air. It has an uninterrupted supply of electricity, gas, water, CETP along with modern amenities like Investors Recreation Club, Convention Hall and a Helipad. In addition, it has an Effluent Treatment Plan and top-notch security system implemented for safe operations of all industries.

The expected industry focus of Meghna includes the following.

- Beverage
- Food items
- Fiber bag
- Steel Construction
- Plastic
- Packaging materials
- Pharmaceutical bottles
- Garments and accessories
- Chemicals

Site Visit & Current Status

MIEZ site was visited on February 15, 2021.. Due to its very attractive location and proximity to the commercial hub of Dhaka, among all the eight EZs, MIEZ is at the most advanced stage of operations.

An enterprise of Meghna Group of Industries (MGI), one of the most well known business conglomerates of the country, MIEZ is a hub of a good number of manufacturing facilities owned by Meghna Group and other external investors. MIEZ has a total of 38 industrial plots. The current operational factories in MIEZ are:

- Meghna Beverage Ltd (Product: Beverage, Bottled Drinking Water; an MGI venture)
- Unique Cement Fiber Industries Ltd (Product: Large synthetic bags and other industrial packaging materials; an MGI venture)
- Meghna Bulk Bag Industries Ltd (Product: Large synthetic bags and other industrial packaging materials; an MGI venture)
- Meghna Foil Packaging Ltd (Product: Industrial foil for packaging materials; an MGI venture)
- Meghna Noodles & Biscuit Factory Ltd (Product: Noodles, biscuits, an MGI venture)
- Sonargaon Steel Fabricate Ltd (Product: Steel frame, structures for industrial construction, an MGI venture)
- Sonargaon Printing & Packaging Industries Ltd (Product: packaging materials, an MGI venture)
- Sakata Inx (Bangladesh) Private Ltd (Product: Printing inks for packaging applications and labels; a Japanese enterprise)
- Siegwerk Bangladesh Ltd (Product: Printing inks for packaging applications and labels; a German enterprise)
- TIC Manufacturing (Bangladesh) Ltd (Product: Garments Hanger; an Australian enterprise)
- Thai Foils and Polymer Industries Ltd (Product: Packaging foils; a venture of local Al-Mostafa Group)

- Meghna Star Cables and Electrical Appliances Ltd (Product: Electrical cable & appliances;; a venture of local Al-Mostafa Group)

Currently 36 out of 38 industrial plots have already been allotted to different investors who are at different stages of their development. Some facilities are under construction and some are still in the planning phase. Some investors have been allotted multiple plots as per respective needs. So, the actual number of manufacturing units may not commensurate with that of the number of plots.

Developer Data

MIEZ has a total of 38 plots to be allocated over the coming three years. 36 out of 38 plots have already been allocated. 10 are already operating with 12 expected to start operations in 2022 and a further 16 in 2023.

The developer of MIEZ estimates an increase of the workforce from 8000 in 2021, to 15000 by 2025. As there are already 10 companies, there is minimal expectation for further workforce growth in 2021. It is expected that the current workforce of 8000 will increase to 9000 by the end of 2022.

The survey data shows that MIEZ is predominantly operational, with 10 companies already active and in production. The investor survey was completed by companies from the following industries:

- Packaging
- Steel

The majority of respondents are from the Packaging sector (83%). What is interesting to note is the overlap between different industry sectors. MIEZ has a major focus on packaging, for other industries, for example, Pharmaceuticals, Food, beverage and chemicals. This provides some opportunity for core skill development across the packaging sector.

Workforce projections - As per developer survey

	MIEZ
2021	8000
2022	9000
2023	11000
2024	13500
2025	15000

1 year manpower requirement (2021): Minimal new employees, potential for upskilling, and need to focus on retention.

As there are already a number of operational factories in MIEZ, the current workforce already stands at close to 8000 employees. With the impact of COVID-19, the expectation is that this will not increase significantly in 2021, with further growth expected in 2022 and onwards.

COVID-19 Impact

All of the surveyed investors have been negatively impacted by COVID-19. This negative impact comes both in terms of delay in operations, as well as a downturn in business performance. Overall there is clearly an overarching delay across the surveyed investors.

Skill Requirements

Economic Zone investors expect there to be (on average) an equal workforce distribution between, highly Skilled, Semi-Skilled, and Unskilled workers. This provides an opportunity to establish a method of on the job training that can result in progressive career development. As outlined later in the report, the importance of core skills will also play a major role in ensuring growth.

Trends Observed

The majority of investors of Meghna are operational and have already started production and operations. As such there has already been a significant effort to build up the workforce.

Most companies expect to source their manpower from within Bangladesh, and where possible from the surrounding area. This provides an excellent opportunity to build competency-based skilling programs that can support the growth of the Meghna industries.

From a recruitment perspective, the majority of manpower sourcing is currently managed through media advertising and personal visits. Referrals also play a significant role in recruitment.

As Meghna is predominantly operational, the growth over the next 2 years is expected to be minimal, with a more significant growth in employee volume expected from 2023 to 2025.

When asked about future skill requirements, and perceived skilling challenges, there was a clear tendency towards digitized roles, with most expecting digitalization to play a major impact on the skill requirements of their workforce. This includes both updates to processes and tools as well as core skills and operations.

4. Abdul Monem Economic Zone (AMEZ)

AMEZ is situated 37 kilometers east of Dhaka city in Gazaria Upazila and Munshiganj District. Spread across 216 acres (with option for expansion up to 300+ acres), its master plan includes 6.5 kilometers of boundary walls, 10 kilometers of internal roads, 1.2 kilometers of artificial water body and jetty facility. Among 79 plots in the zone, 10 plots have been taken by Bangladesh Honda Private Ltd. and 2 by Sakata Inx.

AMEZ aims at providing an area with a congenial investment climate, generating 0.1 million employment opportunities for overall macroeconomic growth and development.

The expected industry focus of AMEZ includes the following.

- Automotive (2 and 3 wheeler) assembly
- Chemicals
- Garments & textiles
- Electronics and ICT
- Food Processing
- Plastic
- Furniture
- Pharmaceuticals
- Light Engineering Industries

Site Visit & Current Status

A site visit was conducted at AMEZ on Tuesday, February 10, 2021. Currently Bangladesh Honda Private Limited (BHL) is the only operational factory that is manufacturing and assembling motorcycles, scooters and other forms of motor vehicles and related accessories of the "Honda" brand and other affiliated brands of Honda Motor Company Limited, Japan.

Some part of AMEZ is already in developed stage and land filling and other infrastructural development works are in progress in other parts of the EZ.

Developer Data

Abdul Monem Economic Zone has a total of 79 plots, to be allocated over the coming 2 years. 1 plot is already operational, but there is no expectation for further plots to be developed in 2021. The expectation is that 50 will be allocated in 2021 and a further 29 in 2022.

The developer of AMEZ estimates an increase of the workforce from 400 in 2021, to 14000 by 2025. As there is already 1 company operational in the automotive industry, there is minimal expectation for further workforce growth in 2021. It is expected that the current workforce of 400 will significantly increase to 2000 by the end of 2022.

1 year workforce growth in the AMEZ is expected to be minimal in 2021.

Workforce Projections - As per developer survey

	AMEZ
2021	400
2022	2000
2023	5000
2024	8000
2025	14000

The survey data shows that AMEZ has one operational factory (Honda Two Wheeler Plant), and is otherwise still in the planning and development phase. The investor survey was completed by companies from the following industry:

- Automotive Assembly

COVID-19 Impact

All of the surveyed investors have been substantially impacted by COVID-19. This negative impact comes both in terms of delay in operations, as well as a downturn in business performance. Overall there is clearly an overarching delay across the surveyed investors.

Skill Requirements

The Economic Zone has a high proportion of skilled workers, with the highest expected percentage of both, professional and Highly skilled workforce of any of the eight economic zones. This is largely due to the nature of production in the automotive industry.

Trends Observed

With only 1 operational company, there is tremendous potential for development at AMEZ. The existing investor (Honda), expects a significant increase in their workforce size over the coming years. The expected growth is from a current workforce of 700 to over 1800 in 2025.

As there are many other industries planning to establish operations at AMEZ, there will be a steady increase in skills demand from 2022 onwards. This provides an opportunity to create over 50,000 jobs over the coming 3 years, with a final projection in excess of 100,00 jobs in the longer term.

There is an expectation to source their manpower from within Bangladesh, and where possible from the surrounding area. This provides an excellent opportunity to build competency-based skilling programs that can support the development and growth of the AMEZ industries.

Honda predominantly recruits its workforce from VET / Educational institutes.

When asked about future skill requirements, and perceived skilling challenges, there was a clear tendency towards digitized roles, with assembly, welding and quality control key focus areas.

5. Bay Economic Zone (BEZ)

Located in the Gazipur Sadar Upazila of Gazipur district, BEZ is spread across 65 acres. Bay is the oldest leather & leather goods related family in Bangladesh. It has moved to backward and forward linkage industries like mould manufacturing, sole manufacturing, and finished shoe manufacturing.

By providing adequate infrastructure, smooth utility supply, BEZ is creating a favourable investment culture. The environmental impact assessment and feasibility study has been completed in the Bay Economic Zone. It holds two export-oriented factories and has erected employment of 975 workers.

The expected industry focus of the BEZ includes the following:

- Plastic Materials
- Leather and Leather products
- Chemical
- Packaging
- Logistics
- Automotive Assembly

Site Visit & Current Status:

A meeting was held with the coordinator of BEZ at their corporate office. And then the BEZ site visit was conducted at BEZ on Saturday, January 23, 2021. There is already one operational factory in BEZ, which is a Chinese plastic toy manufacturing company named Meigo (Bangladesh) Ltd. Meigo manufactures 100% export bound plastic toys for children.

BEZ is surrounded by different buildings and factories. A part of the land had some previous structures that are being razed to accommodate for industrial plots. Landfilling of low lands is in progress.

Developer Data

BEZ has a total of 14 plots, to be allocated over the coming 3 years. 1 plot is already operational, but there is no expectation for further plots to be developed in 2021. The expectation is that 6 will be allocated in 2022 and a further 7 in 2023.

The developer of BEZ estimates a rise in workforce from 500 in 2021, to 2500 by 2025. As there is already one company operational in the automotive industry, there is minimal expectation for further workforce growth in 2021. It is expected that the current workforce of 500 will double to 1000 by the end of 2022.

Workforce projections - As per developer survey

1 year workforce growth in the BEZ is expected to be minimal in 2021 as the existing factory is already operational.

	BEZ
2021	500
2022	1000
2023	1500
2024	2000
2025	2500

The survey data shows that the BEZ has one operational factory in the Automotive sector, and is otherwise still in the planning and development phase.. The investor survey was completed by companies from the following industry:

- Automotive Assembly

COVID-19 Impact

All of the surveyed investors have been substantially impacted by COVID-19. This negative impact comes both in terms of delay in operations, as well as a downturn in business performance. Overall there is clearly an overarching delay across the surveyed investors.

Skill Requirements

According to the survey data, the EZ employs a large proportion of Unskilled manpower (60%).

Trends Observed

With only one operational company, there is excellent potential development for the BEZ.

The existing investor expects a significant increase in their workforce size over the coming years. The expectation is to double its workforce from 500 to 1000 by 2025.

As there are many other industries planning to establish operations at BEZ, there will be a steady increase in skills demand from 2022 onwards.

There is an expectation to source their manpower from within Bangladesh, and where possible from the surrounding area. This provides an excellent opportunity to build competency-based skilling programs that can support the development and growth of the BEZ industries.

The investor sources their manpower through site visits and on premise interviews.

When asked about future skill requirements, and perceived skilling challenges, there was a clear tendency towards digitized roles, with assembly, welding and quality control key focus areas.

6. Kishoreganj Economic Zone (KEZ)

Situated on 91.63 acres of land in Pakundia upazila near the Bhairab-Kishoreganj Highway, KEZ is an initiative taken by the Nitol Niloy Group. A heavy automobile plant and a steel manufacturing plant is likely to be set up, expecting to create jobs for 15,000 people.

Suitable Industries: Garment and shoe manufacturing plants, Automobile and Steel factories.

The expected industry focus of the Bay Economic Zone includes the following.

- Garment and Shoe Manufacturing
- Automobile
- Steel

Site Visit & Current Status

KEZ site was visited on February 16, 2021 at Pakundia Upazila under the administrative district of Kishoreganj . It was learnt that the current KEZ site had been the site for a Government owned Sugar Mill which was privatized by the Government and handed over to Nitol Group (the developer of KEZ) for operation. However, that effort to revitalize the sugar mill did not go far and hence it has been converted to an Economic Zone. However, although defunct, the structure of the sugar mill still stands within the KEZ area till date. The KEZ authority has plans to remove that structure. There is also a “Nitol Tata Motors Driver Training School” with its driving tracks, administrative buildings and students’ hostel within the EZ complex. Preparation to relocate the school is already under progress.

An effort to develop the land met initial resistance from the local community, who insisted on reopening the sugar mill. However, after fruitful negotiation, the issue was resolved amicably. But, the development effort was further stalled by COVID-19. Currently the land development activities are in progress in KEZ.

The KEZ area is bifurcated into two parts by the Bhairab-Kishoreganj road. Landfilling activity and erection of boundary walls is in progress in the larger part of the KEZ. So far, NITA Company Ltd, a joint venture between Nitol Group of Bangladesh and TATA Group of India has been allotted a land at KEZ. The company is expected to set up a plant to manufacture passenger (sedan) vehicles at KEZ. Containers full of plant machineries are already at the site. The construction work of the plant is likely to start soon.

Developer Survey Findings

The developer has approximately 36 plots to be allocated over the next 3 years. The expectation is that 17 of these plots will be allocated in 2021, with the rest being allocated in 2022. This will result in a steady increase in manpower, from 200 in 2021 to an expected total of 4825 by 2025.

Workforce projections - As per developer survey

	Kishoreganj Economic Zone
2021	200
2022	2036
2023	3122
2024	4208
2025	4825

1 year workforce growth in the KEZ is expected to be minimal (200) in 2021.

As KEZ is in the early stages of development, and as a result of a lack of on the ground presence, we will focus the TNA findings on relevant industry sectors and the perceived skill requirements.

7. Sirajganj Economic Zone

Established on the banks of the Jamuna River, Sirajganj Economic Zone is located on 1035.93 acres of land. It will operate as the most lucrative green economic zone in the country, creating 500,000 jobs.

This EZ is well connected to the northern part of the country by road, river, rail, and air. It is also connected to neighbouring countries India, Nepal, and Bhutan by the Burimari, Hili, and Banglabandha land ports and the Chattagram and Mongla sea ports.

The expected industry focus of the Bay Economic Zone includes the following.

- RMG / Textile / Footwear
- Food Processing
- Pharmaceuticals
- Leather
- Automobile

Site Visit & Current Status

Sirajganj Economic Zone site was visited on February 18, 2021. The Sirajganj EZ, till date, is the largest privately owned EZ in the country. This EZ is a joint venture of ten different enterprises based in Bangladesh. At present, there is no operational unit and land development activities are in progress in Sirajganj Economic Zone. However, following is a list of current investors who have been allotted land in the SEZ:

- Marina Property (BD) Ltd (Product: Real Estate & Land Development)
- Tex Town Ltd (Product: RMG)
- Jessore Feed Ltd (Product: Poultry Feed)
- Knit Asia Ltd (Product: Textiles)
- MK Chemical Industries Ltd (a business unit of Hohenstein Institute an international research & testing institute)
- Ratul Fabrics Ltd (Product: Textiles)
- Rising Holdings Ltd (Product: Real Estate)

All these investors are still in the planning phase and yet to start construction of their facilities.

The SEZ stands at the bank of river Jamuna and the entire site has been naturally reclaimed due to the shift of the river track after the construction of the Bangabandhu Bridge over the river Jamuna. The developers are conducting landfilling activities by deploying dredgers to lift sand from the river bed to fill the land. Currently landfilling activities are going on at the phase-one area of the project. Under the phase-one of the project, there will be 153 industrial plots (of different sizes like 1, 2, 3 & 5-acre plots) covering a total area of 289 acres. The plots of the phase-one area are expected to be handed over to the respective investors by early 2022.

Developer Survey

The developer has approximately 900 plots to be allocated over the next 3 years. The expectation is that 13 of these plots will be allocated in 2021, 290 in 2022 and approximately 600 in 2023. This will result in a steady increase in manpower, from 0 in 2021 to an expected total of 250000 by 2025.

Workforce projections - As per developer survey

	Sirajganj Economic Zone
2021	0
2022	30000
2023	100000
2024	150000
2025	250000

1 year workforce growth in the Sirajganj Economic Zone is expected to be minimal in 2021.

The survey data shows that Sirajganj Economic Zone has one factory in the planning phase. This investor is from the RMG sector. Other investors are still in the planning and development phase. The investor survey was completed by 1 company from the following industry:

- Ready Made Garments (RMG)

COVID-19 Impact

The investor has been substantially impacted by COVID-19. This negative impact comes both in terms of delay in operations, as well as a downturn in business performance. Overall there is clearly an overarching delay across the surveyed investors.

Skill Requirements

According to the survey data, the EZ employs a large proportion of Semi-Skilled manpower (55%). The biggest challenges in skill development expected by the EZ are in the areas of Quality control, Sewing operations, production roles, Industrial engineering. The developers of the EZ do not believe they will have the capacity/ capability to train their own workforce and look for support. There is an expectation that 50% of the workforce will need to undergo formal skills training.

Trends Observed

Currently with no company in operation, there is excellent potential development for the Sirajganj Economic Zone. The existing investor expects to start operations in 2023 with a workforce of 500 people. This is expected to remain consistent through 2025.

As there are many other industries planning to establish operations at Sirajganj Economic Zone, there will be a steady increase in skills demand from 2022 onwards.

There is an expectation to source their manpower from within Bangladesh, and where possible from the surrounding area. This provides an excellent opportunity to build competency-based skilling programs that can support the development and growth of the Sirajganj Economic Zone industries.

The investor expects to source their manpower through media advertising.

When asked about future skill requirements, and perceived skilling challenges, there was a clear tendency towards digitized roles, with machine operators, sewing and design.

8. Hoshendi Economic Zones in Munshiganj

Established at Gazaria Upazila of Munshiganj district on a land of 108 acres, Hoshendi Economic Zone, a concern of City Group, is expected to generate 15,000 direct and indirect employment as well as draw investments worth of US\$ 2.0 billion.

According to the project master plan, this private EZ will be an environmentally friendly industrial estate having adequate amount of green zone, open spaces, waste management facilities and Effluent Treatment Plant (ETP). It plans to build around 10 industrial units in the zones which include cement, salt and chemicals, ceramic, ship building and 100-MW power plant.

Recently, partnering with German and Swiss financial institutions, Prime Bank arranged foreign currency credit for setting up City Group's most advanced free-flowing iodised salt manufacturing project in this EZ.

The expected industry focus of the Hoshendi Economic Zones includes the following.

- Salt
- Chemical
- Prefabricated building materials
- Cement
- Ship building and repair
- Ceramic
- Light Engineering
- Automotive
- Paper Mills

Site Visit & Current Status

Hoshendi Economic Zone became the 11th EZ to receive their EZ license from BEZA in January 2020. A visit was conducted on February 15, 2021 at Hoshendi Economic Zone (HEZ) site at Gazaria Upazila under the administrative district of Munshiganj. HEZ is an enterprise of "City Group", one of the oldest and most respected conglomerates, with multiple business verticals, in the country. HEZ has plans to develop 9 industrial plots that can be allotted to potential investors. Following companies have already been allotted industrial plots at HEZ:

- Dhaka Salt & Chemicals Ltd
- Dhaka Sugar Ltd
- UK Bangla Paper Mills Ltd
- UK Bangla Cement Ltd
- City LPG Ltd

There will also be sites for a power plant and a shipyard (for ship building and repairing) within HEZ.

Currently, land development activities are in progress in HEZ. Number of structures, set up by the previous owner of the land, are set to be demolished and an existing slipway (for repairing ships) will also be removed. The developer has plans to expand the area of HEZ after the development of phase one has been completed.

Developer Survey Findings

The developer has a total of 9 plots to be allocated over the next 3 years. The expectation is that 3 of these plots will be allocated in 2021, 3 in 2022 and 3 in 2024. This will result in a steady increase in manpower, from 500 in 2021 to an expected total of 4500 by 2025.

	Hosendi Economic Zone
2021	500
2022	1500
2023	2500
2024	3500
2025	4500

1 year workforce growth in the Hosendi Economic Zone is expected to be significant with the establishment of 3 companies with a combined workforce of 500 people.

Investor Survey Findings

To date, there have been no responses from the investors of the Hosendi Economic Zones, As the EZ is in the early stages of development, and as a result of a lack of on the ground presence, we will focus the TNA findings on relevant industry sectors and the perceived skill requirements.

An aerial photograph of a city, likely in a tropical region, featuring a wide river or canal. The city is densely packed with buildings, and a large bridge with multiple arches spans across the water. In the foreground, there are several large, modern buildings with flat roofs. The sky is filled with soft, white clouds. A large, semi-transparent blue rectangle is overlaid on the left and center of the image, containing the title text.

KEY SURVEY FINDINGS AND SECTOR PROFILES

VI. INDUSTRY FOCUS: CURRENT TRENDS & FUTURE SKILLS

An in-depth analysis was conducted using advanced data sourcing techniques covering global and local demand for the focus industries. This analysis utilized recruitment data from the year 2019 and compared it with data from 2020. The process analyzed millions of data records across the focus industries. The following is a summary of the data.

1. There is an upward trend towards acquiring skills related to data engineering, data science, data analysis, and data integration in almost all industries and the top players lead in looking for those skills through their job posts. Bangladesh job posts and skills indicate that there is much room for improvement in data literacy domain
2. Demand for skills related to the most important digital strategic trends (digitalization, IoT devices, AI, robotics and automation, smart manufacturing etc.) are increasing tremendously over the last year in all industries. Incorporating digital skills in the job posts, cross functional roles and multidisciplinary skills are evolving in all sectors. To follow the trends, industries in Bangladesh should focus on digital capabilities and skills like digitalization, robotics & automation, AI, and ML etc.
3. Some of the most important job families (production, marketing, sales, supply chain management, procurement and QA/QC) show higher future orientation year-over-year (YoY). The overall share of the future oriented skills in these job families is lower in all industries in Bangladesh

The top demanded soft skills in all industries are emotional intelligence, attention to details, strategy making, business acumen, consulting, change management, and customer orientation etc.

1. Ready Made Garments (RMG) / Apparel

The garments sector popularly known as the Ready-Made Garments is the largest industrial sector in Bangladesh which contributes almost 16% of the country's GDP, according to the central bank. It plays a key role in employment generation, provision of income to the poor, female employment and in the socio-economic development of the country^[1].

The last financial year that ended in June, Bangladesh's garment exports totalled \$27.94 billion, down 18% from the previous year. There was a rebound of less than 1% in the July-September quarter, thanks to a surge in demand for knitwear items, which account for half of Bangladesh's total garment exports^[2].

In 2020, the export value ready-made garments (RMG) in Bangladesh amounted to approximately 27.95 billion U.S. dollars. This was a decrease from the previous year, in which RMG exports in Bangladesh amounted to just over 34 billion U.S. dollars.

Skill Demand

Despite the impact of COVID-19, the Ready-Made Garment Sector in Bangladesh is expected to continue to grow significantly over the coming years. This growth can only be fueled by an increase in the skilled workforce. Part of this growth depends on Bangladesh attracting higher value product manufacturing,

which is often managed by more developed countries. These value-added products require a higher skill set, that in turn delivers a higher quality and therefore more valuable product.

When looking at the RMG sector within the scope of the EZ's, BSMSN, in particular, will have a large RMG sector. This investment in new production facilities will also focus on the development of new and higher quality products that will require a more skilled workforce. As many of the factories are in the construction and/or planning phase, it is expected that there will be a broad workforce requirement that will include job roles from Unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following represent the key job roles required in the short term for the RMG sector:

- Apparel Workers
- Apparel Manufacturer
- Buying Agents
- Boiler Operator
- Cutters & Pressers
- Fashion Designers
- Laundry and Dry-Cleaning Workers
- Merchandise Displayers / Window Dressers / Visual Merchandising
- Pattern Makers
- Production Management / Engineering
- Retailers - clothes
- Set and Exhibit Designers
- Sewing Machinist
- Shoe & Leather Workers
- Textile Bleaching & Dyeing Machine Operators
- Textile Machine Operators

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a Sewing Machinist include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Alter Wearing Apparel ● Decorate Textile Articles ● Distinguish Accessories ● Distinguish Fabrics ● Manufacture Wearing Apparel Products ● Operate Garment Manufacturing Machines ● Sew Pieces Of Fabric ● Sew Textile-based Articles 	<ul style="list-style-type: none"> ● Apparel Manufacturing Technology ● Buttonholing ● Manufacturing Of Made-up Textile Articles ● Manufacturing Of Wearing Apparel 	<ul style="list-style-type: none"> ● Embroider Fabrics ● Manufacture Personal Protective Equipment Made Of Textile

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

RMG and Textile Industry Occupations as outlined by NTVQF

The RMG sector is well established in Bangladesh and has seen significant efforts in the past years to update qualification frameworks across various occupations. As such the majority of current job role requirements are covered under the existing framework. However, there needs to be careful consideration of the quantity and quality of skills developed. The possibility of career progression and the interchangeability between occupations need to be managed to ensure flexibility and competitiveness within the labour market.

In addition, there is very little focus on future skill sets, linked to digital technologies, that will have a significant impact in the coming years.

A key point to consider is the sudden growth in demand for skilled workers, generated by the growth of the EZ's. As RMG is a mature sector in Bangladesh, there will be an initial talent shortage, particularly at the semi-skilled and high-skilled job roles. This will result in the need for further development of training partners, and updates of the curriculum, to take into account changing demand.

The following chart outlines the present occupational professions of the RMG & Textile sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 58 different Occupational Standards
- Sewing Machine Operation, Sweater Machine Operation, Apparel Screen Printing, Sewing Machine Operation (Knit), Sewing Machine Operation (Woven), Sewing Machine Operation(Denim), Sewing Machine Operation (Lingerie), Sewing Machine Maintenance and RMG Industrial Engineering have the highest quantity of various training course

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Sewing Machine Operation	0	1	1	1	1	0	0	0
2. Circular Knitting Machine Operation	0	0	1	1	0	0	0	0
3. Sweater Machine Operation	0	0	1	1	1	0	0	0
4. Apparel Screen Printing	0	0	1	1	1	0	0	0
5. Sewing Machine Operation (Knit)	0	0	1	1	1	0	0	0
6. Sewing Machine Operation (Woven)	0	0	1	1	1	0	0	0
7. Sewing Machine Operation(Denim)	0	0	1	1	1	0	0	0
8. Sewing Machine Operation (Lingerie)	0	0	1	1	1	0	0	0
9. Sewing Supervising	0	0	0	0	0	1	1	0
10. Sewing Machine Maintenance	0	0	0	1	1	1	0	0
11. Rmg Industry A1 Engineering	0	0	0	0	0	1	1	1
12. Apparel Merchandising	0	0	0	0	1	0	0	0
13. Production Planning & Control	0	0	0	0	1	0	0	0
14. Pattern Making and Cutting Operation	0	0	1	1	0	0	0	0
15. Mid-level Supervising	0	0	0	0	1	0	0	0
16. Social Compliance And HR Management	0	0	0	0	1	0	0	0

17. Weaving Technology	0	0	0	1	0	0	0	0
18. Safety Management For Rmg Industry	0	0	0	0	1	0	0	0
19. Quality Control Management	0	0	0	0	0	1	0	0
20. Production Planning & Supply Chain Management	0	0	0	0	0	1	0	0
21. Garments Finishing	0	0	1	1	0	0	0	0
22. Textile Spinning Machine Operation (Preparatory)	0	0	0	1	0	0	0	0
23. Textile Spinning Machine Operation (Ring And Finishing)	0	0	0	1	0	0	0	0
24. Textile Weaving Machine Operation	0	0	1	1	0	0	0	0
25. Ring Frame Operation	0	0	0	1	0	0	0	0
26. Computer Aided Design (CAD) For Garments	0	0	0	0	0	1	0	0
27. Yarn Manufacturing Operation	0	0	0	1	0	0	0	0
28. Computerized Sweater Machine Operation	0	0	0	0	1	0	0	0
29. Mid-level Management	0	0	0	0	0	1	0	0
30. Industrial Engineering And Lean Manufacturing	0	0	0	0	0	1	0	0
31. Basic Of Woven Structure	0	0	0	1	0	0	0	0
32. Basic Techniques Of Dyeing And Printing Operation	0	0	0	1	0	0	0	0
33. Computer Aided Design (CAD) For Textile	0	0	0	0	1	0	0	0
34. Fashion Design And Entrepreneurship	0	0	0	0	0	1	0	0

Mid to Long Term Perspective

As with the majority of manufacturing industries, digital technologies will play a major impact in the development of manufacturing industries. This is particularly true in industries that rely on relatively low-cost labour to be competitive.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the Ready-Made Garment Sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Art & Design Roles
3. Marketing Roles
4. Service/ Technician Roles
5. Production Roles

Top 15 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
IT roles			
Data engineer specialist	Fast paced	+ 430 % <small>increase in demand</small>	- 20 % <small>decrease in demand</small>
Trend forecasting-Using AI	Fast paced		
AR/VR specialist	Fast paced		
Art & design roles			
Style specialist	Fast paced	+ 210 % <small>increase in demand</small>	- 50 % <small>decrease in demand</small>
Creative designer specialist	Fast paced		
Color stylist/artist	Medium		
Marketing roles			
Customer experience specialist	Fast paced	+ 201 % <small>increase in demand</small>	+ 110 % <small>stable demand</small>
Digital marketing Analyst	Fast paced		
Automated marketing manager	Fast paced		

Top 15 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
Service/technician roles			
Maintenance technician	Stable	+ 179 % <small>increase in demand</small>	+ 97 % <small>stable demand</small>
Service manager/representative	Stable		
Facility management specialist	Medium		
Production roles			
Operations specialist	Medium		
Production supervisor	Stable	+ 151 % <small>increase in demand</small>	+ 103 % <small>stable demand</small>
Production planner & supervisor	Stable		

(Refer to Data Pack for full analysis)

The highest increase in global demand within the RMG space between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in the RMG sector, increased by over 430% between 2019 and 2020. This was lead by the job roles:

- Data engineer specialist
- Trend forecasting using Artificial Intelligence
- AR/VR specialist

In Bangladesh, the RMG sector is witnessing a stable increase in the area of service and production roles. The jobs that arise in the future demand skills such as Value chain analysis, clothing/fashion designer, DevOps, marketing, ERP and Certified scrum master, among others. The top future job roles in this sector are:

Service/technician roles

- Maintenance technician
- Service manager/representative
- Facility management specialist

Production roles

- Operations specialist
- Production supervisor
- Production planner & supervisor

The data shows that over the next 3 to 5 years, the RMG industry in Bangladesh will start to see a significant digital shift that will result in the need for a new set of digital skills, across design and production.

For the EZ's in particular, the intention to develop state of the art, globally competitive RMG business will ensure that digital technologies will play a major role in the midterm.

The study clearly outlined that the top 10 future skill requirements in the global RMG sector will include:

- Value chain analysis ▲ 1.000%+
- Agile methods & teams ▲ 549%
- Clothing/fashion designer ▲ 507%
- Customer analytics ▲ 494%
- Digital marketing tools ▲ 360%
- Upselling techniques ▲ 261%+
- Certified scrum master (CSM)▲ 252%
- DevOps ▲ 232%
- Creative visualization ▲ 232%
- Artistic direction ▲ 193%

These job roles also show an inherent shift from basic production to value-added product design and development. This is very much in line with the vision of BEZA and the respective EZ's.

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	2800	5600	8400	12600	18900
Semi-Skilled	L1 and L2	3400	6800	10200	15300	22950
Skilled	L3 and L4	3000	6000	9000	13500	20250
High-Skilled	L5 and L6	600	1200	1800	2700	4050
White Collar	Professional Qualifications	200	400	600	800	1000
	Estimated Workforce	10000	20000	30000	45000	67500

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1. Md. Tahidur Rahman, Md. Habibullah, Md. Abdullah- Al- Masum. (May. - June. 2017). Readymade Garment Industry in Bangladesh: Growth, Contribution and Challenges. IOSR Journal of Economics and Finance (IOSR-JEF) e-ISSN: 2321-5933, p-ISSN: 2321-5925. Volume 8, Issue 3 Ver. I. PP 01-07 www.iosrjournals.org
 2. Reuters Economic News. Bangladesh garment workers pray for orders as pandemic shreds exports. (October, 2020) <https://www.reuters.com/article/health-coronavirus-bangladesh-garments/bangladesh-garment-workers-pray-for-orders-as-pandemic-shreds-exports-idINKBN2750VW>

2. Agri-Business, Food & Meat Processing

Bangladesh is largely an agrarian economy, farming and agriculture accounts for 16% of the GDP, almost half (about 47%) of the working population depends on this sector for food security and poverty mitigation. The focus is on cultivation of hybrid and high yielding variety plantings as the country anticipates importing 200,000 tonnes of rice in 2020-21 to ease food security tensions owing to COVID-19 pandemic, the USDA said^[1]. In 2020, 37.75 percent of the employees in Bangladesh were active in the agricultural sector, 21.65 percent in industry and 40.61 percent in the service sector^[2].

Skill Demand

Reduction of the mobility of labour due to social distancing, decreased transportation and disruption of the entire supply chain has affected the agriculture sector in Bangladesh. The coming years will see a major shift in agribusiness. The limited availability of labour due to COVID has accelerated adoption of mechanization in the agri sector, fuelling the need for skilled workforce. Sustainable agricultural mechanization will effectively add to the development of agricultural value chain and food systems.

Looking at the agri sector within the scope of the EZ's, Sirajganj EZ, in particular, will have agribusinesses including fisheries and meat processing facilities. These facilities developing quality products will require a mix of highly skilled and semi-skilled workforce.

The following represent the key job roles required in the **short term for the agri-business sector**:

- Butchers, fishery workers and related food preparers
- Food technician
- Food technologist
- Food safety specialist
- Food production operator
- Meat preparations operator
- Import export manager in meat and meat products
- Food processing, woodworking, garment and other craft and related trades workers
- Meat cutter
- Food processing and related trades workers
- Food and related products machine operators
- Food production engineer

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a food production operator include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Administer Ingredients In Food Production ● Apply Gmp & Haccp ● Apply Requirements Concerning Manufacturing Of Food And Beverages ● Be At Ease In Unsafe Environments ● Carry Out Checks Of Production Plant Equipment ● Clean Food And Beverage Machinery ● Disassemble Equipment ● Ensure Refrigeration Of Food In Supply Chain 	<ul style="list-style-type: none"> ● Food Safety Principles 	<ul style="list-style-type: none"> ● Adjust Drying Process Of Goods ● Administer Materials To Tea Bag Machines ● Apply Different Dehydration Processes Of Fruits And Vegetables ● Apply Preservation Treatments

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Agro-Business Occupations as outlined by NTVQF

Agriculture is a major sector for Bangladesh's economy, and has seen significant efforts in the past years to update qualification frameworks across various occupations. However, a possibility of career progression and the interchangeability between occupations need to be managed to ensure flexibility and competitiveness within the labour market.

A key point to consider is the sudden demand for future skill sets, linked to digital technologies.

The following chart outlines the present occupational professions of the Agro Food and Processing sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 30 different Occupational Standards
- The average of the standards is level 1
- Lowest possible standard is level PV-2 and highest possible standard is level 5
- Baking, food processing and QC, food packing, food safety & hygiene, poultry & meat processing and design & fabrication of furniture have the highest quantity of various training courses

Occupation (Competency Standards)	NTVQF LEVELS (QUALIFICATION STANDARDS)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Baking	0	0	1	1	1	0	0	0
2. Food Processing and QC	0	0	1	1	1	0	0	0
3. Food packaging	0	0	1	1	1	0	0	0
4. Refrigeration and Cooling System	0	1	1	0	0	0	0	0
5. Food Safety & Hygiene	0	0	1	1	1	1	0	0
6. Poultry & Meat Processing	0	0	1	1	1	0	0	0
7. Chanachur & Jhuri Processing	0	0	1	0	0	0	0	0
8. Puffed & Flattened Rice Processing	0	0	1	0	0	0	0	0
9. Food Grain Machine Operation	0	0	1	0	0	0	0	0
10. Rice Processing	0	0	1	0	0	0	0	0
11. Food Preparation	0	0	0	1	0	0	0	0
12. Improved Cook Stove (ISC) Production and Installation	0	0	0	1	0	0	0	0
13. Organic Vegetable Production	0	0	0	1	0	0	0	0
14. Automatic Packaging	0	0	0	0	1	1	0	0
15. Design and Fabrication of the Furniture	0	0	0	0	1	1	1	0

Mid to Long Term Perspective

As with the majority of manufacturing industries, digital technologies will play a major impact in the development of manufacturing industries. This is particularly true in industries that rely on relatively low-cost labour to be competitive.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the agribusiness sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Marketing roles
3. Quality roles

The highest increase in global demand within the Agribusiness, food & meat processing industry between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in this sector, increased by over 583% between 2019 and 2020. This was lead by the job roles:

- Data scientist and analyst
- Process automation specialist
- IT solution specialist

Top 9 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
▼ IT roles			
Data scientist and analyst	Fast paced	+ 583 % <small>increase in demand</small>	- 10 % <small>decrease in demand</small>
Process automation specialist	Fast paced		
IT solution specialist	Fast paced		
▼ Marketing roles			
Market intelligence analyst	Fast paced	+ 478 % <small>increase in demand</small>	+ 30 % <small>stable demand</small>
Communication specialist	Medium		
Customer experience specialist	Fast paced		
▼ Quality roles			
Nutrition/health compliance specialist	Medium		
Food safety & quality specialist	Medium	+ 229 % <small>increase in demand</small>	- 10 % <small>decrease in demand</small>
Quality improvement leader	Medium		

(Refer to Data Pack for full analysis)

In Bangladesh, the agro-business sector is witnessing a stable increase in the area of marketing roles but a decrease in IT and quality roles. To match global standards and uphold quality product development, the jobs that arise in the future demand skills in automation, robotics, food processing technologies, and agile project management methodologies, among others.

For the EZ's in particular, the intention to develop state of the art, globally competitive agro business will ensure that digital technologies will play a major role in the midterm.

The study clearly outlined that the top 10 future skill requirements:

- Food processing technologies ▲ 939%
- Automation & robotics ▲ 823%
- Litigation ▲ 803%
- Agile project Mgmt. methodologies ▲ 799%
- Liquid chromatography ▲ 491%
- Ergonomics ▲ 488%
- Quality Mgmt. & assurance tools ▲ 486%
- GHS labeling ▲ 450%
- Business intelligence tools & techniques ▲ 376%
- Characterization of food structures & functionalities ▲ 201%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	224	896	2688	5376	16128
Semi-Skilled	L1 and L2	256	1024	3072	6144	18432
Skilled	L3 and L4	240	960	2880	5760	17280
High-Skilled	L5 and L6	64	256	768	1536	4608
White Collar	Professional Qualifications	16	64	192	384	1152
	Estimated Workforce	800	3200	9600	19200	57600

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1. Sourcetrace.com. Digital Agriculture In Bangladesh. (Accessed on January, 2021)
<https://www.sourcetrace.com/blog/digital-agriculture-in-bangladesh/>
 2. Statista.com. Bangladesh: Distribution of employment by economic sector from 2010 to 2020. (Accessed on January, 2021)
<https://www.statista.com/statistics/438360/employment-by-economic-sector-in-bangladesh/>

3. Consumer Electronics

Bangladesh consumer spending is around USD 130 billion+ growing at 6% annually. The market for Consumer Electronics consists of a number of segments, each of which has a significant share in the total market size. In order to get a comprehensive understanding of the market, the consumer durables market has been classified into 4 major categories: Television, Refrigerators, Air Conditioner and Home Appliances (includes washing machines, microwaves and kitchen appliances).

All of the product categories are experiencing rapid growth and continue to exhibit greater market size in the coming years. The market standing for refrigerators and televisions look the most promising in terms of growth^[1].

Skill Demand

To survive the Covid-19 fallout, electronics companies and manufacturers are looking forward to the online retail platforms and digital solutions to send the consumers' desired products to their doorsteps. As consumer confidence recovers from the lows of 2020, Bangladesh's consumer electronics market is forecast to return to growth in 2021. In future, the consumer electronics industry will largely depend on technology.

When looking at the EZ's, BSMSN, Japanese EZ, AMEZ and Hoshendi EZ in particular, will have a large consumer electronics and light engineering sector. Investments in the skilled workforce for R&D (research and development) expansion and industrial development will produce high-quality technological products. As many of the factories are in the planning phase, it is expected that there will be a broad workforce requirement that will include job roles from unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following represent the key job roles required in the **short term** for the consumer electronics sector;

- Consumer electronics repair technician
- Computer and accessories specialised seller
- Computer shop manager
- Electronics drafter
- Consumer rights advisor
- Consumer goods inspector
- Electronics engineering technician
- Electronics production supervisor
- Electronics and automation vocational teacher
- Vehicle electronics installer

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a Consumer electronics repair technician include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● apply company policies ● create solutions to problems ● maintain customer service ● maintain equipment ● provide customer follow-up services ● provide customer information related to repairs ● repair equipment on site ● replace defect components ● set up consumer electronics ● troubleshoot ● use repair manuals 	<ul style="list-style-type: none"> ● consumer electronics ● electronics 	<ul style="list-style-type: none"> ● administer appointments ● apply technical communication skills ● assist customers ● communicate by telephone ● develop professional network ● drive vehicles ● ensure compliance with warranty contracts ● issue sales invoices ● keep stock records

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Light Engineering / Including Consumer Electronic occupations as outlined by NTVQF

Various electrical products such as sockets, cables and electrical fans are manufactured by the light engineering sector with domestic suppliers accounting for 48 to 52 per cent of the country's demand, which was previously met through imports. Further modernisation is taking place in this sector as the use of computerised machinery is expanding gradually, increasing productivity and quality in the process^[2].

A key point of focus is that the sector needs trainers to help develop a skilled workforce in order to flourish as its growth has been very sluggish in absence of investment. As the consumer electronics is a growing sector in Bangladesh, there may be an initial talent shortage, particularly at the semi-skilled and high-skilled job roles.

The following chart outlines the present occupational professions of the Light Engineering Sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 19 different Occupational Standards
- The average of the standards is level 3 (red circle, below statistic)
- Lowest possible standard is level 1, highest possible standard is level 4
- Lathe Machine Operation, Consumer Electronics, Foundry Works and Heat Treatment Operation have the highest quantity of various training course

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. CNC machine operation	0	0	0	0	1	1	0	0
2. Lathe machine operation	0	0	1	1	1	0	0	0
3. Consumer electronics	0	0	1	1	1	0	0	0
4. Electrical installation & maintenance	0	0	0	0	1	0	0	0
5. Foundry works	0	0	1	1	1	0	0	0
6. Heat treatment operation	0	0	1	1	1	0	0	0
7. PLC operation	0	0	0	0	1	0	0	0
8. Master craftsmanship	0	0	0	1	0	0	0	0
9. CAD-CAM design and programming	0	0	0	0	1	0	0	0
10. Electronics servicing and maintenance	0	0	0	1	0	0	0	0

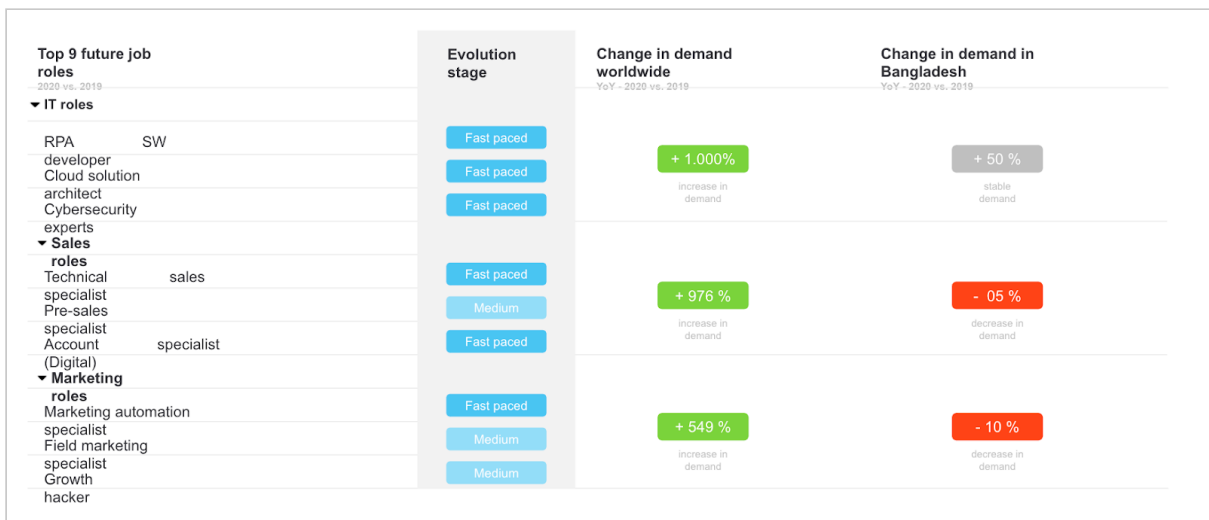
Mid to Long Term Perspective

Diversification and digital technologies will have a major impact on the consumer electronics and light engineering sector. Facilities in EZs will need workers with minimum skills in technology, for example: Computer-Aided Numerically Controlled (CNC) machines, Computer-Aided Design (CAD), heat treatment and testing which are generally used to make similar products globally.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the consumer sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Sales Roles
3. Marketing Roles



(Refer to Data Pack for full analysis)

The highest increase in global demand within the consumer electronics sector between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in this sector, increased by over 1000% between 2019 and 2020. This was lead by the job roles:

- RPA SW developer
- Cloud solution architect
- Cybersecurity experts

In Bangladesh, the consumer electronics sector is witnessing a stable increase in the area of IT roles but a decrease in sales and marketing roles. To match global standards and uphold quality product development, the jobs that arise in the future demand skills in process automation, digital literacy, cloud computing, consultative selling, and marketing to name a few.

The study clearly outlined that the top 10 future skill requirements:

- Process automation ▲ 1.000%+
- Digital literacy ▲ 1.000%+
- Cloud computing ▲ 1.000%+
- 5S ▲ 959%+
- Modular design ▲ 841%
- User experience design (UX/UI) ▲ 823%
- Digital customer experience ▲ 796%
- Consultative selling ▲ 724%
- ISO product validation ▲ 547%
- Surface engineering ▲ 333%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	40	800	1600	3200	6400
Semi-Skilled	L1 and L2	64	1280	2560	5120	10240
Skilled	L3 and L4	72	1440	2880	5760	11520
High-Skilled	L5 and L6	20	400	800	1600	3200
White Collar	Professional Qualifications	4	80	160	320	640
	Estimated Workforce	200	4000	8000	16000	32000

1. Databd.com. Consumer Electronics Overview (Accessed on January, 2021)
<https://databd.co/profiles/industries/profile-consumer-electronics>
2. The Daily Star. Light engineering sector needs skilled workforce, policy support. (September, 2020)
<https://www.thedailystar.net/business/news/light-engineering-sector-needs-skilled-workforce-policy-support-1965289>

4. Automotive Industry

Although the Bangladeshi automotive industry has its origin in the 40's, it has seen considerable growth in the last two decades mostly due to financial liberalization including 100% FDI in the sector. The industry comprises various groups – assemblers, multi-national assemblers, Bangladeshi component suppliers, multinational component suppliers, each with specific strengths and weaknesses, with 77% of the production value contributable to the organized sector and the rest in the SME sector. Presently, there are more than 30 OEMs offering more than 75 options in all categories of vehicles^[1].

Skill Demand

Considering that the automotive industry in Bangladesh is the third largest in South Asia, and that the industry is steadily growing and now moving towards making electric vehicles including two-wheelers and multipurpose vehicles, the need for highly-skilled and semi-skilled workers is rising at a rapid pace.

When looking at the EZ's focusing on the automotive industry,, most facilities in BSMSN, Bay EZ and AMEZ have not yet started operations and some are in the construction phase. Operational facilities have a demand for white collar, highly skilled, semi-skilled and unskilled workers. As many of the factories are in the planning phase, it is expected that there will be a broad workforce requirement that will include job roles from unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following provides an overview of current job roles demanded by the Automotive industry around the world. In line with this, an overview of key competencies, as defined by ESCO, are outlined below.

The following represent the key job roles required in the **short term** for the automotive sector:

- Automotive engineering drafter
- Automotive designer
- Transport equipment painter
- Automotive brake technician
- Automotive battery technician
- Automotive engineer
- Vehicle cleaner
- Wholesale merchant in textile industry machinery
- Textile industry machinery distribution manager
- Automotive engineering technician
- Welder

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a Automotive engineering drafter include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Automotive Engineering ● Install Automotive Electrical Equipment ● Use Automotive Diagnostic Equipment ● Engineering And Engineering Trades ● Design Engineering Components ● Apply Validation Engineering 	<ul style="list-style-type: none"> ● Principles Of Mechanical Engineering ● Automotive Diagnostic Equipment ● Precision Engineering ● Industrial Engineering ● Safety Engineering ● Instrumentation Engineering ● Control Engineering 	<ul style="list-style-type: none"> ● Create Engineering Design Packages ● Use Computer-aided Engineering Systems

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Transport Equipment Sector / Including Automotive Occupations as outlined by NTVQF

With increasing government procurement and growing middle-class society, the automotive parts market was compounding at an annual growth rate of 10 to 12 percent in 2019. Rising purchasing power of individuals has resulted in a growing demand for cars, motorcycles and commercial vehicles. This calls for actions to strengthen the local automotive industry by generating employment for many and reduce import-reliance.

Source:

<https://www.lightcastlebd.com/insights/2020/07/09/bangladesh-automotive-industry-a-roadmap-to-the-future>

The following charts outline the present occupational professions of the Transport equipment sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 36 different Occupational Standards
- The average of the standards is level 1 & 2
- Lowest possible standard is level PV-2, highest possible standard is level 4
- Welding, Machine Shop Practice, Automotive Mechanics, Refrigeration and Air-con have the highest quantity of various training courses

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Electrical Installation and Maintenance	0	0	1	1	1	1	0	0
2. Fitting	0	0	1	1	1	0	0	0
3. Welding	0	1	1	1	1	1	0	0
4. Motorcycle Servicing	0	1	1	1	0	0	0	0
5. Machine Shop Practice	0	0	1	1	1	1	0	0
6. Automotive Mechanics	0	0	1	1	1	1	0	0
7. Refrigeration And Air-con	0	0	1	1	1	1	0	0
8. electrical & navigational equipment installation	0	0	0	0	1	0	0	0
9. installation of heating, ventilation, air conditioning (HVAC) & refrigeration system	0	0	0	0	1	0	0	0
10. auto electricity servicing	0	0	1	0	0	0	0	0
11. air ducting servicing	0	0	0	0	1	0	0	0
12. marine diesel engine artificer	0	0	1	0	0	0	0	0
13. pipe fitter	0	0	1	0	0	0	0	0
14. ship piping	0	0	0	1	0	0	0	0
15. ship painting	0	0	0	1	0	0	0	0
16. ship machinery installation	0	0	0	1	0	0	0	0

Mid to Long Term Perspective

Bangladesh automobile industry has huge potential to become a global part of the supply chain in future. It is moving toward adopting latest technologies, improving human resources, and accomplishing supply chain and global connectivity. Prioritizing the production of commercial and passenger vehicles will promote the development of the automobile industry.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the automotive sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Production Roles
3. Procurement & Logistics Roles

Top 9 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
IT roles			
Data analyst, scientist, & engineer	Fast paced	+ 843 % <small>increase in demand</small>	+ 20 % <small>stable demand</small>
Process automation specialist	Fast paced		
AI & machine learning specialist	Fast paced		
Production roles			
Assembly automation engineer	Fast paced	+ 423 % <small>increase in demand</small>	+ 05 % <small>stable demand</small>
Value chain digitalization specialist	Fast paced		
Assembly simulation engineer	Medium		
Procurement & logistics roles			
Sustainable supply chain specialist	Medium	+ 401 % <small>increase in demand</small>	- 10 % <small>decrease in demand</small>
Contract specialist	Medium		
Commercial trouble-shooter	Fast paced		

(Refer to Data Pack for full analysis)

The highest increase in global demand within the automotive industry between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in this sector, increased by over 843% between 2019 and 2020. This was lead by the job roles:

- Data analyst, scientist, & engineer
- Process automation specialist
- AI & machine learning specialist

In Bangladesh, the automotive industry is witnessing a stable increase in the area of IT and production roles but a decrease in procurement and logistics roles. To match global standards and uphold quality product development, the jobs that arise in the future demand skills in industrial automation, 5G, scaled agile framework (SAFe), lean production and hybrid cloud infrastructure to name a few.

The study clearly outlined that the top 10 future skill requirements:

- Industrial automation ▲ 1.000%+
- 5G ▲ 1.000%+
- Scaled agile framework (SAFe) ▲ 1.000%+
- SAP Ariba ▲ 901%
- Lean production ▲ 694%
- Hybrid cloud infrastructure ▲ 521%
- Telepresence technologies ▲ 504%
- Microchip technologies ▲ 389%
- Telematics ▲ 356%
- Simulation system ▲ 326%
- System integration ▲ 294%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	600	1200	2400	4800	9600
Semi-Skilled	L1 and L2	1020	2040	4080	8160	16320
Skilled	L3 and L4	1020	2040	4080	8160	16320
High-Skilled	L5 and L6	300	600	1200	2400	4800
White Collar	Professional Qualifications	60	120	240	480	960
	Estimated Workforce	3000	6000	12000	24000	48000

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1. Mahadi Hasan Miraz, Dr. Md. Mamun Habib, Mohammad Shahansha Molla, Mohammad Ismail Majumder. Supply Chain Management and ICT on Automotive Industry in Bangladesh. (February 2016) *Research Gate*.
https://www.researchgate.net/publication/322977951_Supply_Chain_Management_and_ICT_on_Automotive_Industry_in_Bangladesh

5. Leather & Leather Goods

Decades ago, rawhide from Bangladesh had good demand among international leather product brands, but currently the demand is declining. One of the reasons for the decline is the quality of hides not matching international standards. In the last three fiscal years, annual export of finished leather and semi-finished crust leather declined to one-fifth, from \$490 million to \$98 million, according to the Export Promotion Bureau (EPB)^[1].

The sector employs 200,000 direct local workforce out of which 60,000 workers have already been unemployed. Moreover, the sector also employs approximately 700,000 workforce in the domestic market^[2].

Skill Demand

There is acute shortage of trained manpower with experienced technical know-how for production of quality crust and finished leather. The efforts initiated by modernization of the leather tanning industry will fuel the need for employing skilled technicians and workers, besides bringing in the latest machinery. Lack of practical knowledge in commercial production is going to result in huge losses in time, money and effort.

Considering that tanning industries are by and large labor intensive and looking at the EZ's, the leather industry will have a presence in BSMSN, Bay EZ and Sirajganj EZ. It will require well-trained manpower consisting of technologists, chemists, machine operators and designers with a high degree of adaptability for the forthcoming changes in the near future.

The following provides an overview of current job roles demanded by the Leather Goods industry around the world. In line with this, an overview of key competencies, as defined by ESCO, are outlined below.

The following represent the key job roles required in the **short term** for the Leather sector:

- Leather goods artisanal worker
- Leather goods CAD patternmaker
- Leather goods patternmaker
- Leather goods production supervisor
- Leather goods machine operator
- Leather goods manufacturing technician
- Leather good quality controller
- Leather good hand stitcher
- Import / Export Manager
- Leather finishing operator

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a leather goods artisanal worker include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Prepare Leather Goods Samples ● Repair Leather Goods ● Pack Leather ● Apply Machine Cutting Techniques For Footwear And Leather Goods ● Develop Footwear And Leather Goods Marketing Plans ● Apply Stitching Techniques ● Plan Supply Chain Logistics For Footwear And Leather Goods ● Operating Machinery For The Manufacture And Treatment Of Leather Products 	<ul style="list-style-type: none"> ● Hides, Skins And Leather Products ● Leather Goods Components & Materials ● Leather Goods Manufacturing Processes ● Leather Products Maintenance ● Automatic Cutting Systems For Footwear And Leather Goods ● Leather Colour Chemistry 	<ul style="list-style-type: none"> ● Pre-stitching Processes And Techniques For Footwear And Leather Goods ● Ergonomics In Footwear And Leather Goods Design

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Leather and Leather Goods Occupations as outlined by NTVQF

The leather goods and footwear sector is Bangladesh's second promising sector after RMG and the scenario looks bleak. Factories will have to remodel their operations/production capacity to flourish in global markets and maximize export earnings.

A key point to consider is the growth which needs to be accomplished in the leather industry. To match the growth and re-emphasise quality of leather goods, public and private training service providers need to focus on creating a skilled workforce in different occupations of leather processing, particularly at the high-skilled job and semi-skilled roles.

The following charts outline the present occupational professions of the Leather & Leather good sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 21 different Occupational Standards
- The average of the standards is level 2 & 3
- Lowest possible standard is level 1, highest possible standard is level 5
- Machine Operator Footwear, Machine Operator Leather goods, Machine Operator Tannery Machine Maintenance Leather have the highest quantity of various training courses

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Machine Operator, Footwear	0	0	1	1	1	0	0	0
2. Machine Operator, Leather Goods	0	0	1	1	1	0	0	0
3. Machine Operator, Tannery	0	0	1	1	1	0	0	0
4. Machine Maintenance Leather	0	0	1	1	1	1	0	0
5. Supervising (Tannery, Leather Goods And Footwear)	0	0	0	0	0	0	1	0
6. Setting And Assembling Operations - Leather Goods	0	0	0	0	1	0	0	0
7. Cutting Machine Operation	0	0	0	1	0	0	0	0
8. Lasting And Assembling Operation	0	0	0	1	0	0	0	0
9. Total Quality Management (TQM)	0	0	0	0	1	0	0	0
10. Setting Operation- Footwear	0	0	0	1	0	0	0	0
11. Pattern Making Grading CAD- CAM Operation	0	0	0	0	1	0	0	0
12. Leather Sewing Operation	0	0	0	0	1	0	0	0

Mid to Long Term Perspective

Positioning Bangladeshi leather in the global market, marketing high-quality rawhide and leather goods and getting enough international buyers will demand a highly-skilled workforce. Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the leather sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. Production Roles
2. IT roles
3. Sales Roles

Top 9 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide	Change in demand in Bangladesh
		<small>YoY - 2020 vs. 2019</small>	<small>YoY - 2020 vs. 2019</small>
▼ Production roles Ops manager Operations coordination specialist Manufacturing operator specialist	Medium Medium Medium	+ 561 % <small>increase in demand</small>	+ 50 % <small>stable demand</small>
▼ IT roles Cloud architect Platform SW developer Site reliability engineer	Fast paced Fast paced Medium	+ 466 % <small>increase in demand</small>	- 10 % <small>decrease in demand</small>
▼ Sales roles E-commerce specialist Key account management specialist Digital sales specialist	Medium Stable Fast paced	+ 369 % <small>increase in demand</small>	+ 120 % <small>stable demand</small>

(Refer to Data Pack for full analysis)

The highest increase in global demand within the leather industry between 2019 and 2020 was in the area of production roles. Overall Global demand for production skills in this sector, increased by over 581% between 2019 and 2020. This was lead by the job roles:

- Ops manager
- Operations coordination specialist
- Manufacturing operator specialist

In Bangladesh, the leather industry is witnessing a stable increase in the area of production and sales roles but a decrease in IT roles. To match global standards and uphold quality product development, the jobs that arise in the future demand skills in production data management, agile testing, measurement technologies, account based marketing, and cloud computing to name a few.

The study clearly outlined that the top 10 future skill requirements:

- Production data management ▲ 705%
- Agile testing ▲ 670%
- Measurement technologies ▲ 460%+
- Account based marketing (ABM)▲ 355%
- Cloud computing ▲ 297%
- Anti reflective coating technologies▲ 276%
- Kanban ▲ 270%
- Continual improvement process ▲ 269%
- Best sustainable practices ▲ 264%
- Environmental accounting ▲ 250%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	180	720	2880	5760	11520
Semi-Skilled	L1 and L2	198	792	3168	6336	12672
Skilled	L3 and L4	162	648	2592	5184	10368
High-Skilled	L5 and L6	48	192	768	1536	3072
White Collar	Professional Qualifications	12	48	192	768	3072
	Estimated Workforce	600	2400	9600	19200	38400

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1. The Business Standard. Leather gets a raw deal. (July, 2020) <https://tbsnews.net/economy/industry/leather-gets-raw-deal-112870>
 2. Asif Uddin Ahmed, Asad-Uz-Zaman, Zubayer Zakir Khan. Post COVID-19 Jobs and Skills in Bangladesh. (June 2020) Future of Work Lab, a2i. <http://skills.gov.bd/files/frontend/resources/c7b0884f-1ae2-4753-b60d-4c1d59ef062b.pdf>

6. Ship Building

Ship building industry generates a large amount of revenues for the country. The seaborne cargo growth is increasing 6-8% per year and demand of new ship building is increasing at the rate of 3-4% per year. Experts say more than 55% of the world's ships are more than 20 years old and need replacing^[1]. Globally, this small and medium sized ship market is worth around \$400 billion. If Bangladesh can get 1% of this market, then it amounts to \$4 billion. Bangladesh's Ship & Boat Building data was reported at 30,755.000 Metric Ton in Oct 2020. This records an increase from the previous number of 30,526.000 Metric Ton for Sep 2020^[2].

Skill Demand

The global ship recycling industry has been mainly concentrated in Asia and Bangladesh has been a prominent ship-recycler and emerging ship-builder. According to a study by the United Nations Conference on Trade and Development (UNCTAD), Bangladesh appeared as the primary destination for ship demolition in 2019. Although demands for vessels are on a decline in the global market due to COVID, ship dismantling will continue to grow. Also, Bangladesh currently builds smaller vessels of 10,000 DWT (deadweight tonnage). To increase the capacity of building larger vessels in the future, major infrastructural changes and a highly skilled workforce are imperative.

Source: <https://databd.co/stories/beyond-coronavirus-the-next-phase-for-shipbuilding-industry-13035>

When looking at the scope of the EZ's, BSMSN, in particular, will have a large shipbuilding sector. This investment in new shipbuilding facilities will require a more skilled workforce. As many of the factories are in the construction and/or planning phase, it is expected that there will be a broad workforce requirement that will include job roles from Unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following represent the key job roles required in the **short term** for the Shipbuilding sector;

- Structural-metal preparers and erectors
- Carpenters and joiners
- Electromechanical engineering technician
- Steam engine and boiler operators
- Marine mechanic
- Machinery, industrial equipment, ships and aircraft distribution manager
- Ship assistant engineer
- Riggers and cable splicers
- Ship and aircraft controllers and technicians
- Vessel assembly inspector
- Welder

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a [Marine mechanic](#) include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Operate Marine Machinery Systems ● Installing, Maintaining And Repairing Mechanical Equipment ● Operate Marine Communication Systems ● Procure Mechanical Machinery ● Repair Vessel Mechanical Systems ● Inspect Maritime Operations ● Design Electromechanical Systems 	<ul style="list-style-type: none"> ● Mechanical Engineering ● Mechanics Of Vessels ● Precision Mechanics ● Principles Of Mechanical Engineering ● Maritime Telecommunications 	<ul style="list-style-type: none"> ● Model Electromechanical Systems ● Oceanography

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Transport Equipment Sector / Including Ship Building Occupations as outlined by NTVQF

Shipbuilding is an occupational group of construction mechanics, which are present in a wide range of areas. Construction mechanics/ work in the areas of equipment engineering, sheet metal construction, shipbuilding, welding technology and in steel and metal construction.

The shipbuilding sector is established in Bangladesh., and has a number of overlapping job roles that connect it with other industrial sectors. Welding as an example. As such the majority of current job role requirements are covered under the existing framework. However, there needs to be careful consideration of the quantity and quality of skills developed. In addition, there is very little focus on future skill sets, linked to digital technologies, that will have a significant impact in the coming years.

A key point to consider is the rise in demand for skilled workers. As shipbuilding is an evolving sector in Bangladesh, there will be an initial talent shortage, particularly at the semi-skilled and high-skilled job roles. This will result in the need for further development of training partners, and updates of the curriculum, to take into account changing demand.

The following charts outline the present occupational professions of the Transport equipment sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 36 different Occupational Standards
- The average of the standards is level 1 & 2
- Lowest possible standard is level PV-2, highest possible standard is level 4

- Welding, Machine Shop Practice, Automotive Mechanics, Refrigeration and Air-con have the highest quantity of various training courses

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Electrical Installation And Maintenance	0	0	1	1	1	1	0	0
2. Fitting	0	0	1	1	1	0	0	0
3. Welding	0	1	1	1	1	1	0	0
4. Motorcycle Servicing	0	1	1	1	0	0	0	0
5. Machine Shop Practice	0	0	1	1	1	1	0	0
6. Automotive Mechanics	0	0	1	1	1	1	0	0
7. Refrigeration And Air-con	0	0	1	1	1	1	0	0
8. Electrical & Navigational Equipment Installation	0	0	0	0	1	0	0	0
9. Installation Of Heating, Ventilation, Air Conditioning (HVAC) & Refrigeration System	0	0	0	0	1	0	0	0
10. Auto Electricity Servicing	0	0	1	0	0	0	0	0
11. Air Ducting Servicing	0	0	0	0	1	0	0	0
12. Marine Diesel Engine Artificer	0	0	1	0	0	0	0	0
13. Pipe Fitter	0	0	1	0	0	0	0	0
14. Ship Piping	0	0	0	1	0	0	0	0
15. Ship Painting	0	0	0	1	0	0	0	0
16. Ship Machinery Installation	0	0	0	1	0	0	0	0

Mid to Long Term Perspective

The shipbuilding sector will need skills related to engineering, automation and environmental performance of vessels. The current resources will clearly need strengthening, both numerically and in terms of skills. There may be some areas where specialist training is required for example: ship design engineers.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the shipbuilding Sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Engineering Roles
3. Production Roles

The highest increase in global demand within the shipbuilding space between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in the shipbuilding sector, increased by over 170% between 2019 and 2020. This was lead by the job roles:

- Robotics engineer
- 3D designer
- Shipbuilding software solutions

Top 9 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
IT roles			
Robotics engineer 3D designer	Fast paced	+ 170 % <small>increase in demand</small>	+ 20 % <small>stable demand</small>
Shipbuilding software solutions	Fast paced		
Engineering roles			
Health and safety engineer Process engineer Engineering designer	Fast paced Fast paced Medium	+ 155 % <small>increase in demand</small>	+ 05 % <small>stable demand</small>
Production roles			
Production control analyst Planning manager/specialist Structural specialist	Medium Stable Fast paced	+ 150 % <small>increase in demand</small>	- 10 % <small>decrease in demand</small>

(Refer to Data Pack for full analysis)

In Bangladesh, the shipbuilding sector is witnessing a stable increase in the area of IT and Engineering roles. The jobs that arise in the future demand skills such as shipbuilding design software, requirement analysis, automation & robotics, and quality assurance to name a few.

The data shows that over the next 3 to 5 years, the shipbuilding industry in Bangladesh will start to see a significant digital shift that will result in the need for a new set of digital skills, across design and production.

For the EZ's in particular, the intention to develop state of the art, globally competitive shipbuilding business will ensure that digital technologies will play a major role in the midterm.

The study clearly outlined that the top 10 future skill requirements will include:

- Shipbuilding design software ▲ 1.000%+
- Requirement analysis ▲ 705%
- Automation & robotics ▲ 676%
- Quality assurance ▲ 416%
- Lean manufacturing ▲ 355%
- Agile project management tools ▲ 339%
- Predictive analytics and maintenance ▲ 303%
- Ship interiors ▲ 268%
- Naval architects ▲ 260%
- Team building ▲ 234%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	120	600	1800	5400	10800
Semi-Skilled	L1 and L2	140	700	2100	6300	12600
Skilled	L3 and L4	100	500	1500	4500	9000
High-Skilled	L5 and L6	32	160	480	1440	2880
White Collar	Professional Qualifications	8	40	120	360	720
	Estimated Workforce	400	2000	6000	18000	36000

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1. Mohammad Takiuddin Saki. A Study on Present Scenario of Bangladesh Ship Building Industries, Underlying Problems and Probable Solution. (October 2019) Research Gate.
https://www.researchgate.net/publication/336834326_A_Study_on_Present_Scenario_of_Bangladesh_Ship_Building_Industries_Underlying_Problems_and_Probable_Solution
 2. ceicdata.com. Bangladesh Production by Commodity. Bangladesh Production: Agriculture & Forestry Machinery (Accessed on January, 2021) <https://www.ceicdata.com/en/bangladesh/production-by-commodity>

7. Pharmaceuticals

The pharmaceutical market of Bangladesh is expected to surpass \$6 billion by 2025 with an absolute growth of 114 percent from its 2019 levels, according to a report from a Dublin-based market insight and analysis firm, Research and Markets^[1].

Skill Demand

The report, Bangladesh Pharmaceutical Market Future Opportunity Outlook 2025, said that the pharmaceutical market has been witnessing excellent growth in recent years, and it is expected to have a compound annual growth rate of more than 12 per cent during the 2019-2025 period^[2].

Despite the impact of COVID-19, the Pharmaceutical Sector in Bangladesh is positioned to grow over the coming years. This growth will demand a skilled workforce to deliver value-added products.

When looking at the Pharmaceutical sector within the scope of the EZ's, BSMSN, Japanese, AMEZ, MIEZ and Sirajganj EZ, in particular, will have the presence of the pharmaceutical sector. This investment in new production facilities will also focus on the development of new and higher quality products that will require a more skilled workforce. As many of the factories are in the construction and/or planning phase, it is expected that there will be a broad workforce requirement that will include job roles from Unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following represent the key job roles required in the **short term for the Pharmaceutical sector**:

- Pharmacy technician
- Pharmaceutical engineer
- Fermenter operator
- Chemical and photographic products plant and machine operators
- Pharmacists
- Pharmaceutical goods distribution manager
- Wholesale merchant in pharmaceutical goods
- Pharmaceutical quality specialist
- Import export manager in pharmaceutical goods
- Import export specialist in pharmaceutical

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a Pharmaceutical engineer include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Apply Validation Engineering ● Design Pharmaceutical Manufacturing Systems ● Evaluate Pharmaceutical Manufacturing Process ● Manage Pharmaceutical Production Facilities Construction ● Ensure Quality Assurance For Pharmaceutical Products ● Manufacture Medicines ● Ensure The Appropriate Supply In Pharmacy ● Design Engineering Components 	<ul style="list-style-type: none"> ● Pharmaceutical Technology ● Pharmaceutical Products ● Pharmaceutical Legislation ● Pharmaceutical Manufacturing Quality Systems ● Pharmaceutical Drug Development ● Safety Engineering 	<ul style="list-style-type: none"> ● Pharmacotherapy ● Genetic Engineering

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Pharmaceutical Occupations as outlined by NTVQF

The Pharmaceutical sector is well established in Bangladesh and has seen significant efforts in the past years to update qualification frameworks across various occupations. As such the majority of current job role requirements are covered under the existing framework.

As pharmaceutical is a mature sector in Bangladesh, there will be a need to reskill employees to address talent gaps, retaining the bulk of its operations workers and empower them to take advantage of a new world. The following chart outlines the present occupational professions of the Pharmaceutical Sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 16 different Occupational Standards
- The average of the standards is level 2, 3 & 4
- Lowest possible standard is level 1, highest possible standard is level 5
- Machine Operation, Machine Operation Glazing and Decoration & Printing, Industrial Mechanical Maintenance and Packaging have the highest quantity of various training course

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Machine Operation	0	0	1	1	1	1	0	0
2. Machine Operation	0	0	0	1	1	1	1	0
3. Industrial Mechanical Maintenance	0	0	0	1	1	1	1	0
4. Packaging	0	0	1	1	1	1	0	0

Mid to Long Term Perspective

The pharmaceutical industry will introduce advanced technologies and automation, while employing advanced data analytics processes. Companies will have to invest in upskilling and reskilling their workers to significantly adapt to succeeding in the new digitally enabled work environment. Empowering people with a mix of skills to succeed in a digital world of work will need to be promoted, particularly for low-skilled workers, any barriers to training will need to be addressed.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the pharmaceutical sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Core Pharma Roles
3. Procurement & Logistics Roles

Top 9 future job roles <small>-2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
IT roles			
Data engineer & scientist	Fast paced	+645 % increase in demand	+76 % stable demand
EHR/EMR implementation & integration specialist	Fast paced		
Advanced automation/robotics engineer	Fast paced		
Core pharma roles			
Upstream/downstream manufacturing specialist	Fast paced	+425 % increase in demand	+105 % stable demand
Medical affairs specialist	Fast paced		
Pharmacovigilance specialist	Medium		
manager			
Procurement & logistics			
Procurement analysis specialist	Medium	+234 % increase in demand	+97 % stable demand
Strategic sourcing analyst	Medium		
Supply chain design & planning specialist	Fast paced		

(Refer to Data Pack for full analysis)

The highest increase in global demand within the Pharmaceutical space between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in the Pharmaceutical sector, increased by over 645 % between 2019 and 2020. This was led by the job roles:

- Data engineer & scientist
- EHR/EMR implementation & integration specialist
- Advanced automation/robotics engineer

In Bangladesh, the Pharmaceutical sector is witnessing a stable increase in the area of IT, core pharma and procurement & logistics roles. The jobs that arise in the future demand skills such as Bioinformatics, Big data technologies, Cobot and process simulation to name a few.

For the EZ's in particular, the intention to develop state of the art, globally competitive Pharmaceutical business will ensure that digital technologies will play a major role in the midterm.

The study clearly outlined that the top 10 future skill requirements will include:

- Bioinformatics ▲ 1.000%+
- Big data technologies (AI,ML, etc.) ▲ 784%
- Cobot ▲ 674 %
- Process simulation ▲ 519%
- Upstream/downstream bioprocessing ▲ 515%
- Medical surveillance ▲ 464%
- Digitally enabled/automated labs ▲ 454%
- Non-compartmental analysis (NCA) ▲ 423%
- Synthetic biology ▲ 408%
- Genetic engineering ▲ 400%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	160	640	1280	2560	5120
Semi-Skilled	L1 and L2	240	960	1920	3840	7680
Skilled	L3 and L4	288	1152	2304	4608	9216
High-Skilled	L5 and L6	96	384	768	1536	3072
White Collar	Professional Qualifications	16	64	128	256	512
	Estimated Workforce	800	3200	6400	12800	25600

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1. The Daily Star. Bangladesh on track to becoming a \$6b pharma market by 2025. (November, 2020)
<https://www.thedailystar.net/business/news/bangladesh-track-becoming-6b-pharma-market-2025-1995741>
 2. Yahoo News. Bangladesh Pharmaceutical Market: Opportunity Outlook to 2025 - ResearchAndMarkets.com. (July 2020)
<https://uk.news.yahoo.com/bangladesh-pharmaceutical-market-opportunity-outlook-131600878.html>

8. Steel Industry

Steel industry of Bangladesh has contributed immensely in the country's overall infrastructure development by providing long steel products such as rebar, angel, beam and channel. Demand for long steel has increased sharply in recent years – currently 7.5 million MT of rebar which was merely 2.5 million MT in a decade ago. Per capita consumption of steel stands at 45kg – per capita, steel consumption is expected to be 73kg by 2022.

There is considerable uncertainty in the projections of future demand due to the ongoing coronavirus crisis. Under the best-case scenario, the current stagnant period may well be over and a boost in demand from 2021 onward would bring the steel industry back to the pre-corona situation^[1].

Skill Demand

Despite the impact of COVID-19, the steel Sector in Bangladesh is expected to grow over the coming years. This growth can only be fueled by state-of-art equipment and a skilled workforce who can work with the digitally enabled equipment.

When looking at the steel sector within the scope of the EZ's, BSMSN, MIEZ and KEZ, in particular, will have a steel sector. This investment in new production facilities will require a skilled workforce. As many of the factories are in the construction and/or planning phase, it is expected that there will be a broad workforce requirement that will include job roles from unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following represent the key job roles required in the short term for the steel sector;

- Metal rolling mill operator
- Blacksmiths, toolmakers and related trades workers
- Metal, machinery and related trades workers
- Welder
- Boilermaker
- Metallurgist
- Process metallurgist
- textile industry machinery distribution
- metal rolling mill operator
- Structural-metal preparers and erectors

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a metal rolling mill operator include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Tend Hot Rolling Mill ● Tend Pug Mills ● Tend Cnc Milling Machine ● Tend Cylindrical Grinder ● Operate Hammer Mill ● Operate Raw Mineral Size Reduction Equipment ● Chase Threaded Hole ● Tend Grinding Mill Machine 	<ul style="list-style-type: none"> ● Metal Hot Rolling Technology ● Mill Operations ● Milling Machines ● Metal Forming Technologies ● Metal And Metal Ore Products ● Screw Manufacturing Processes ● Metal Smoothing Technologies 	<ul style="list-style-type: none"> ● Metal Thermal Conductivity ● Metal Drawing Processes

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Construction Sector, including Steel Industry Occupations as outlined by NTVQF

The steel sector is well established in Bangladesh and is a major contributor to the national economy. The growth of the steel industry in Bangladesh is mainly induced by the expansion of the country's shipbuilding, real estate, increasing demand for graded steel products as well as various government infrastructure projects. The growing demand for steel products ensures promising industry prospects, however, there is very little focus on future skill sets which is critical to meet the demand in the coming years.

The following charts outline the present occupational professions of the Construction Sector. The competencies are assigned to the respective NTVQF levels.

Characteristics:

- 58 different Occupational Standards
- The average of the standards is level 2
- Lowest possible standard is Level PV-2, highest possible standard is level 4
- Electrical Installation and Maintenance (C.C), Plumbing, Masonry, Rod Binding, Finishing Carpentry and Aluminum Fabrication have the highest quantity of various training course

Occupation (Competency Standards)	NTVQF Levels (Qualification Standards)							
	PV-1	PV-2	L-1	L-2	L-3	L-4	L-5	L-6
1. Electrical Installation & Maintenance (C.C)	0	1	1	1	1	1	0	0
2. Plumbing	0	1	1	1	1	1	0	0
3. Masonry	0	0	1	1	1	1	0	0
4. Rod Binding	0	0	1	1	1	1	0	0
5. Finishing Carpentry	0	0	1	1	1	1	0	0
6. Aluminum Fabrication	0	0	1	1	1	1	0	0
7. Scaffolding And Form Fitting	0	0	1	1	1	0	0	0
8. Quality Control For Construction Industry	0	0	0	0	0	1	0	0
9. Supply Chain Management For Construction Industry	0	0	0	0	0	1	0	0
10. Project Management For Construction Industry	0	0	0	0	0	1	0	0
11. Steel Binding And Fabrication	0	0	0	1	0	0	0	0
12. Cad For Construction 2D & 3D	0	0	0	0	1	0	0	0
13. Shuttering	0	0	1	1	1	0	0	0
14. Lift Installation And Maintenance	0	0	0	1	1	1	0	0
15. False Ceiling Making	0	0	1	1	1	0	0	0
16. Tiles And Marble Works	0	0	1	1	1	0	0	0
17. Grill Making	0	0	1	1	1	0	0	0
18. Building Painting	0	0	1	1	1	0	0	0
19. Crane And Forklift Operation	0	0	0	1	0	0	0	0
20. Duct Fitting For Air-conditioning & Ventilation	0	0	0	1	0	0	0	0
21. Building Supervision & Services	0	0	0	0	0	1	0	0
22. Glazing Works	0	0	0	1	1	0	0	0
23. Construction Supervisor	0	0	0	0	1	0	0	0

Mid to Long Term Perspective

To boost the competitiveness of Bangladesh's steelmaking workforce, competent personnel in the form of engineers with qualifications in materials science will be essential. Digital technologies will play a major impact in the development of steel manufacturing industries.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the steel sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. Production Roles
2. Engineering Roles
3. IT roles

The highest increase in global demand within the steel space between 2019 and 2020 was in the area of production roles. Overall Global demand for production skills in the steel sector, increased by over 225% between 2019 and 2020. This was led by the job roles:

- Process operators
- Production managers
- Structural steel technicians

Top 9 future job roles <small>2020 vs. 2019</small>	Evolution stage	Change in demand worldwide <small>YoY - 2020 vs. 2019</small>	Change in demand in Bangladesh <small>YoY - 2020 vs. 2019</small>
▼ Production roles			
Process operators	Medium	+ 225 % <small>increase in demand</small>	+ 50 % <small>stable demand</small>
Production managers	Medium		
Structural steel technicians	Medium		
▼ Engineering roles			
Energy engineer	Medium	+ 201 % <small>increase in demand</small>	- 10 % <small>decrease in demand</small>
Automation engineer	Fast paced		
Design engineers	Fast paced		
▼ IT roles			
IT integration architect	Fast paced	+ 195 % <small>increase in demand</small>	+ 120 % <small>stable demand</small>
IT techno-functional analyst	Fast paced		
Data analyst	Fast paced		

(Refer to Data Pack for full analysis)

In Bangladesh, the steel sector is witnessing a stable increase in the area of IT and production roles. The jobs that arise in the future demand skills such as supplier relationship management, commodity management, supply chain management and value chain analysis to name a few.

For the EZ's in particular, the intention to develop state of the art, globally competitive steel business will ensure that digital technologies will play a major role in the midterm.

The study clearly outlined that the top 10 future skill requirements will include:

- Supplier relationship management ▲ 1.000%+
- Sourcing & Procurement ▲ 705%
- Commodity management ▲ 670%
- Supply chain management ▲ 565%
- Value chain analysis ▲ 460%+
- Service management ▲ 416%
- Data governance & analysis ▲ 355%
- Safety rules ▲ 343%
- Heavy equipment handling ▲ 297%
- Flexible manufacturing systems ▲ 297%

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	200	1200	2400	7200	10800
Semi-Skilled	L1 and L2	248	1488	2976	8928	13392
Skilled	L3 and L4	272	1632	3264	9792	14688
High-Skilled	L5 and L6	64	384	768	2304	3456
White Collar	Professional Qualifications	16	96	192	576	864
	Estimated Workforce	800	4800	9600	28800	43200

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1. NewsVision. Coronavirus Effect on Bangladesh's Steel Industry. (Accessed on February 2021)
<http://newvision-bd.com/bangladeshs-steel-industry-analysis/>

9. Chemical

Chemicals are considered intermediate goods as these are used in different industries as inputs for the production of other goods including final products. The rapid industrialization of Bangladesh has led to rapid growth in demand for different chemical products. However, production of safe and high-quality chemicals is a capital-intensive business and it also demands specialized skills. As a result, the demand for chemical products in Bangladesh has been met predominantly through import.

Bangladesh's chemical imports have nearly tripled in the past decade, spurred by the rising demand from various industrial sectors catering to domestic and foreign markets. Based on the import data from Bangladesh Bank, the chemical import has been steadily growing at an average of around 8% annually over the last decade. At present, the import market of inorganic chemicals to Bangladesh would be between US\$ 2.5 – US\$ 3.0 billion. However, interestingly, despite heavy dependence on import for chemicals, Bangladesh has also been able to create an export market for its chemical products in selected product categories. According to Export Promotion Bureau (EPB) data between July 2020 – January 2021, Bangladesh has exported Chemical products worth US\$ 147 million.

Different types of chemicals are used in almost all industries. However, the major consumers of chemicals in Bangladesh are manufacturers of paper and pulp, textiles, dyeing, pharmaceuticals, food processing, tanning, water treatment, plastics, footwear, detergent, petroleum refining, effluent treatment, steel mills, processing of bones In gelatin industry, disinfectant & odor control, paint, artificial leather, rubber, all flexible PVC products, fertilizer, foam, cosmetics, crop and fish farming etc.

Although Bangladesh imports a wide range of basic chemicals to many specialty chemicals, the existing manufacturing facilities in the country are engaged in mostly manufacturing of basic chemicals that are used as input for various manufacturing processes. Among them, the “Chloro-Alkali” process is being used to manufacture chemical products like Caustic Soda (NaOH), Hydrogen Peroxide (H₂O₂), Hydrochloric Acid (HCl), Sodium Hypochlorite (NaOCl), Chlorinated Paraffin wax (CPW), Stable Bleaching Powder (SBP), Poly Aluminum Chloride (PAC) Liquid, Poly Aluminum Chloride (PAC) Powder, Chlorine (Cl₂) etc. Besides the “Chloro-Alkali” product line, there are also some products like Calcium Carbonate (CaCO₃), Calcium Carbonate Filler Compound and some other specialty chemicals.

The most prominent chemical manufacturing companies includes ASM Chemical Industries Ltd, Global Heavy Chemicals Ltd (Opsonin Group), Samuda Chemical Complex Ltd (TK Group), Tasnim Chemical Complex Ltd (Meghna Group), and HP Chemicals Ltd (Union Group) and SR Chemical Industries Ltd (SR Group) etc.

As this is a highly specialized industry where “safety” is a very high concern, the chemical industry demands a highly skilled workforce. Due to the current COVID conditions, we anticipate companies to accelerate their pace of change. Changes in structures and business processes are likely to affect how human resources are hired and managed. Chemical companies may need to draw workers from outside the traditional pool of chemical engineers, perhaps from the technology sector to obtain digitally proficient candidates. Especially to capitalize on the market opportunities that recovery from COVID-19 will bring.

Skill Demand

The chemical sector in Bangladesh is expected to grow. Balancing the advancement of technology with more hands-on levels of technical skills is the need of the hour.

When looking within the scope of the EZ's, BSMSN, in particular, will have the presence of the chemical sector. This investment in new production facilities will also focus on operational efficiency and the development of quality products. However, currently as many of the factories are in the construction and/or planning phase, it is expected that there will be a broad workforce requirement that will include job roles from unskilled entry-level positions through semi-skilled, high-skilled and professional sectors.

The following represent the key job roles required in the short term for the chemical sector:

- Chemical mixer
- Chemical metallurgist
- Chemical engineer
- chemical products distribution manager
- Chemical processing plant controller
- Chemical engineering technician
- Chemical plant manager
- Textile chemical quality technician
- Wholesale merchant in chemical products
- Chemical production manager
- HAZMAT Tanker Driver
- HAZMAT warehouse in charge
- Maintenance technician

By examining the job roles listed above and comparing them with the skills and competency requirements of the European Skills Competency & Occupations (ESCO) framework, a clear overview of the required job competencies can be seen.

As an example, the essential skills and competences of a Chemical engineer include:

Essential skills and competences	Essential Knowledge	Optional skills and competences
<ul style="list-style-type: none"> ● Chemical Engineering And Processes ● Handle & Transfer Chemicals ● Manage Chemical Reagents ● Analyse Chemical Substances ● Regulate Chemical Reaction ● Maintain Chemical Mixers ● Manage Chemical Testing Procedures 	<ul style="list-style-type: none"> ● Chemical Products ● Precision Engineering ● Characteristics Of Chemicals Used For Specific Industries ● Industrial Engineering ● Safety Engineering 	<ul style="list-style-type: none"> ● Identify Processes For Re-engineering ● Apply Validation Engineering

The data for this occupation and others listed above can be found through the ESCO website: <https://ec.europa.eu/esco/portal>

Mid to Long Term Perspective

The chemicals industry has been a slow mover compared to many other industries when it comes to digitalization. However, companies will look for new ways to drive efficiency. The sector will see greater adoption of artificial intelligence, machine learning, robotic process automation and other emerging technologies. This in turn will demand a workforce with a strong set of skills.

Extensive job-based research and data analytics provides us with a detailed overview of global job demand over the past two years and provides insights into the future of work with the chemical sector.

The following represent the job families with the highest growth rate in global job demand between 2019 and 2020:

1. IT roles
2. Marketing Roles
3. Logistics Roles

Top 9 future job roles 2020 vs. 2019	Evolution stage	Change in demand worldwide YoY - 2020 vs. 2019	Change in demand in Bangladesh YoY - 2020 vs. 2019
IT roles Machine learning/ deep learning/ data science specialist Deployment infrastructure specialist Process automation specialist	Fast paced Fast paced Fast paced	+ 1.000 % increase in demand	+ 50 % stable demand
Marketing roles Digital marketing specialist Marketing content analyst Public affair specialist	Fast paced Medium Medium	+ 596 % increase in demand	- 10 % decrease in demand
Logistics roles Supply chain consultant Logistics & supply chain engineer Supply chain analyst & planner	Medium Medium Fast paced	+ 584 % increase in demand	+ 120 % stable demand

(Refer to Data Pack for full analysis)

The highest increase in global demand within the chemical space between 2019 and 2020 was in the area of IT roles. Overall Global demand for IT skills in the chemical sector, increased by over 1000% between 2019 and 2020. This was lead by the job roles:

- Machine learning/ deep learning/ data science specialist
- Deployment infrastructure specialist
- Process automation specialist

In Bangladesh, the chemical sector is witnessing a stable increase in the area of IT and logistics roles. The jobs that arise in the future demand skills such as data governance & security, chemometrics, process validation, cloud computing and configuration management to name a few.

For the EZ's in particular, the intention to develop state of the art, globally competitive chemical business will ensure that digital technologies will play a major role in the midterm.

The study clearly outlined that the top 10 future skill requirements will include:

- Data governance & security ▲ 1.000%+
- Chemometrics ▲ 1.000%+

- Process validation ▲ 1.000%+
- Cloud computing ▲ 999%
- Configuration management ▲ 861%
- Accident prevention regulation ▲ 617%
- Laboratory automation ▲ 597%
- High-throughput screening ▲ 460%
- Integrated marketing communication ▲ 459%
- Good laboratory practice (GLP) ▲ 360%+

Estimated Workforce Projection for the Next 5 Years as per Developer Feedback

	NTVQF LEVEL	2021	2022	2023	2024	2025
Unskilled	PV-1 and PV-2	160	640	1280	2560	5120
Semi-Skilled	L1 and L2	240	960	1920	3840	7680
Skilled	L3 and L4	288	1152	2304	4608	9216
High-Skilled	L5 and L6	96	384	768	1536	3072
White Collar	Professional Qualifications	16	64	128	256	512
	Estimated Workforce	800	3200	6400	12800	25600

A grayscale background image showing a person in a white lab coat and a face mask, likely a healthcare worker, sitting at a desk. The person is looking down at a laptop screen. There are several sheets of paper on the desk, and a hand is visible holding a pen over one of the papers. The overall scene suggests a professional or medical setting.

**ASSESSMENT
OF CURRENT
LABOUR SUPPLY
AND KNOWN
NATIONAL
SKILLS
DEVELOPMENT
INVESTMENTS**

VII. ASSESSMENT OF CURRENT LABOUR SUPPLY AND KNOWN NATIONAL SKILLS DEVELOPMENT INVESTMENTS

1. TVET Sector in Bangladesh Overview

Considering the huge internal and external demand for skilled labour and the TVET favourable demographic and socio-economic factors, the TVET sector in Bangladesh has an important role to play for ensuring a steady supply of skilled manpower.

However, given the poor outreach of the TVET system and the traditional, general perception of TVET in society, access to the formal TVET system is low. A large segment of the population acquires vocational and technical skills on the job, mostly as part of the production process. In the informal sector, workers are directly inducted and briefly trained before kick-starting work. In the formal sector, they are being trained to some extent, but the actual learning outcome is achieved through observation of a supervisor or co-workers during routine work.

The education system in Bangladesh has made good progress in ensuring access to education which leads to a healthy gross enrolment in primary education. However, the dropout rate all together is alarming; for example, primary level dropout rate was 19.2 % and secondary level a total of 38.3 % in 2016. The dropout rate among girls in secondary level was 42.19 %, and among boys was 33.80 %. The dropout rate in higher secondary level in 2016 was 20.08 %, with 23.83 % girls and 16.55 % boys^[1]. This implies that a large number of youth do not stay in school long enough to be eligible for accessing the formal TVET, which has until recently only been open to students who have successfully passed the class VIII (Junior School Certificate - JSC and Junior Dakhil Certificate - JDC) public examination.

Overall TVET enrolment in Bangladesh remains low compared to the global average for proportion of secondary school people enrolled in skills development programs which was 11 % in 2010 (UNESCO, 2013) As per BANBEIS data, the total number of TVET students was 116,055 in the year 2000 and 506,556 in 2011, a 4.3x increase in 10 years. This increased further to 872,658 in 2015 and stood at 1,067,484 in 2018^[2].

Further details on the growth in the number of TVET institutes, teachers and students from 2000 to 2018, and National Policies and Plans can be found in the Annex - 5.

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4. The Daily Star. 38.3 % secondary students drop out in 2016. (May, 2017)
<https://www.thedailystar.net/business/news/bangladesh-track-becoming-6b-pharma-market-2025-1995741>
 5. data.banbeis.gov.bd. Chapter- Seven Technical and Vocational Education. (Accessed on February 2021)
<http://data.banbeis.gov.bd/images/ban007.pdf>

2. TVET Courses

The formal training under BTEB is provided as short courses such as **basic trade course** (360 hours, 95 trades) and **CBT&A** course (51 occupations), **secondary level such as SSC vocational course** (31 trades), **Dakhil-vocational offered by Madrasahs, higher secondary level such as HSC-voc course** (14 trades), HSC -Business management, Diploma in commerce, **Diploma level course in engineering** (34 technologies), **textile engineering** (3 technologies), **agriculture, fisheries, forestry, medical** (8 technologies) and **other professional level courses**.

The formal TVET provision, courses, and programs are offered by different government and private technical schools and colleges, polytechnics, private training institutions, technical training centres and specialized institutes throughout Bangladesh. The informal and nonformal skill training are provided by the respective ministries and government agencies, INGOs and NGOs.



There are over 400 Bangladesh Technical Education Board (BTEB) approved institutes that provide courses aligned to the NTVQF framework. These institutes have been vetted for quality delivery and focus on skill and competency based outcomes. This is an excellent place for BEZA to start when looking for training partners for the new Economic Zones. For a complete breakdown of approved BTEB and BITAC institutes please view the data pack.

The table below shows the **Number of Institutions, Teachers and Student Enrolments by Type, Management and Gender (2018)**

Type of Institute	Management	No. of Inst.	Teachers			Students		
			Total	Female	% of female	Total	Girl	% of girl
Polytechnic Institute	Public	52	2495	298	11.94	131668	19928	15.14
	Private	387	9336	1735	18.58	119102	21686	18.21
	Total	439	11831	2033	17.18	250770	41614	16.59
Technical School & College	Public	64	1719	195	11.34	57432	7855	13.68
	Private	110	2296	589	25.65	34974	11137	31.84
	Total	174	4015	784	19.53	92406	18992	20.55
Glass & Ceramic Institute	Public	1	16	2	12.50	1008	43	4.27
	Private							
	Total	1	16	2	12.50	1008	43	4.27
Graphic Arts Institute	Public	1	46	11	23.91	1196	145	12.12
	Private		0					
	Total	1	46	11	23.91	1196	145	12.12
Survey Institute	Public	2	38	7	18.42	842	38	4.51
	Private	2	25	3	12.00	435	42	9.66
	Total	4	63	10	15.87	1277	80	6.26
Technical Training Centre	Public	68	1432	254	17.74	25512	7715	30.24
	Private	96	274	51	18.61	12785	4985	38.99
	Total	164	1706	305	17.88	38297	12700	33.16
Textile Institute	Public	10	192	28	14.58	3595	288	8.01
	Private	23	338	65	19.23	6548	507	7.74
	Total	33	530	93	17.55	10143	795	7.84
Textile Vocational	Public	41	381	76	19.95	6472	1551	23.96
	Private	10	86	25	29.07	1295	264	20.39
	Total	51	467	101	21.63	7767	1815	23.37
Agriculture Training Institute	Public	13	246	65	26.42	11412	3522	30.86
	Private	170	1096	212	19.34	18753	3065	16.34
	Total	183	1342	277	20.64	30165	6587	21.84
Marine Technology	Public	1	120	12	10.00	776	42	5.41
	Private							
	Total	1	120	12	10.00	776	42	5.41
S.S.C Vocational (Independent)	Public	11	275	41	14.91	2975	508	17.08
	Private	158	2368	501	21.16	23616	6902	29.23
	Total	169	2643	542	20.51	26591	7410	27.87
HSC Voc/B. Management (Independent)	Public	10	150	26	17.33	3128	175	5.59
	Private	665	9512	1827	19.21	163742	48992	29.92
	Total	675	9662	1853	19.18	166870	49167	29.46
Medical Technology	Public	97	1244	215	17.28	5654	2104	37.21
	Private	11	103	18	17.48	9206	3534	38.39
	Total	108	1347	233	17.30	14860	5638	37.94
Medical Assistant Training School	Public	200	648	212	32.72	23216	9711	41.83
	Private	9	28	9	32.14	3392	1488	43.87
	Total	209	676	221	32.69	26608	11199	42.09
S.S.C Vocational (Attached)	Public	155	1350	254	18.81	27983	4732	16.91
	Private	2556	7733	1770	23.50	202412	53442	35.06
	Total	2711	9083	2024	22.28	230395	58174	25.25
HSC Voc/B. Management(Attached)	Public	140	1071	244	22.78	26136	8881	33.98
	Private	1802	6313	1467	23.24	142219	40980	28.81
	Total	1942	7384	1711	23.17	168355	49861	29.62
Total(Technical Education)	Public	866	11423	1940	16.98	329005	67238	20.44
	Private	5999	39508	8272	20.94	738479	197024	26.68
	Total	6865	50931	10212	20.05	1067484	264262	24.76

Image Source; Table 7.6^[2]

Further details on the Key TVET Initiatives And Projects can be found in the Annex - 5.3.

3. Employability of TVET Graduates

There has been a general argument from the employer’s side that the traditional TVET graduates were deficient in terms of efficiency, updated skills on technology, and core (life skills) that is much needed in modern employment practices. With the introduction of NTVQF, and competency-based training and assessment system, the skills mismatch has been greatly minimized as course accreditation, new competency standards and course literature, manuals and the overall monitoring system were put in place.

The ultimate impact has already started surfacing as revealed in the BTEB study titled ‘Matching of NTVQF Qualification with The Occupations of Present Employment Market’ (September 2018). The study shows that 94.4% graduates are now engaged in either paid work or as self-employed entrepreneurs while the remaining 5.5% could still have the potential to be employed but chose to move to occupations not linked to their qualifications. This reflects a strong impact of the systems and support mechanism, as well as capacity building endeavours undertaken for DET, BTEB, and the private Registered Training Organizations (RTOs).

The table below shows the outcome of various TVET programs as % employability

Employment Status	RPL Stream	Graduates of RTOs	Industry Assessors	Teachers/ Trainers	Average
Employed by Govt./Private sector	54.8%	73.0%	80.6%	100%	77.1%
Self-employed	39.8%	11.7%	17.5%	0.0%	17.3%
Total gainfully engaged	94.6%	84.7%	98.1%	100%	94.4%
Not employed	5.4%	15.3%	1.9%	0.0%	5.6%

Source: BTEB, September 2018

Relative to the unemployment figures of the Public and Private University graduates in Arts, Science and Business in Bangladesh, the employment rate is extremely low, or none for the TVET graduates. A recent report of the Economist Intelligence Unit (EIU, 2015) partly attributes the graduate unemployment problem to the fast expanding but poor-quality private education sector and use of outdated curriculum in public universities. Unemployment among graduates rose in fiscal 2016-17 in a worrying development for a country like Bangladesh with a sizable young demographic. The rate of unemployment among persons with an education of up to tertiary level increased 11.2 percent in fiscal 2016-17 from 9 percent a year earlier, according to the latest Labour Force Survey (LFS) by the Bangladesh Bureau of Statistics (BBS).

This is a positive development and highlights the progress made by the TVET sector in the previous decades.

4. Challenges in The TVET System

Like in most developing countries, the TVET system in Bangladesh faces numerous challenges.

Quality of current training

The quality and effectiveness of current training is hampered by: (i) lack of trained teachers due to low output by TVET teacher training institutions; (ii) lack of in-service training opportunities, and poor incentives; (iii) absence of quality of teaching and learning outcomes resulting from inadequate provision of modern learning facilities; (iv) high (about 50%) vacancy rate for teaching positions in public training institutions; (v) curriculum updating not adequately adaptive due to the centralised control; overreliance on written examination; (vi) overemphasis on theory in teaching and testing rather than on practical instructions; (vii) inadequate financing to maintain facilities, use of old-fashioned equipment, and consumables and training materials for training; (viii) poor labour market research and weak linkage with the industries leading to TVET courses with missing links to emerging industry demand, green jobs, technological changes such as 4th Industrial Revolution; and (ix) absence of government systems to delegate powers, particularly to public training institutions, to generate earnings, hire trainers and resource persons with industry experience, offer market responsive flexible courses, and enter into partnerships with employers and enterprises to make training relevant and place graduates in jobs.

The NTVQF forms the basis of consistent, industry wide training and skills recognition that can address employer needs for quality production and worker needs for appropriate pay based on skills. Although the NTVQF has been approved by the government, the implementation of the NTVQF is still limited because of the absence of relevant government orders to apply it and because of the limited awareness of the employers regarding the Bangladesh NTVQF.

Currently, the National Qualification Framework (NQF) is under preparation and is expected to be in place by 2021. One of the key policy options in relation to NQF is a unified approach that will include all sectors of education and training with one national authority responsible for implementation and quality assurance. The challenge lies in the rolling out of the NTVQF and NQF as early as feasible, and through which, the establishment of a flexible, open, accessible and responsive system for workforce development, and putting in place a strong industry leadership across the whole economy

Access and equity

The proportion of students enrolled in TVET increased from 0.4 % in 2001 to 1.8 % in 2013 (CAMPE, 2016). It is still very low compared to the global average for the proportion of secondary school students enrolled in skills development programs which was 11 % in 2010 (UNESCO, 2013).

In 2018, out of one million enrolled students in 6,865 public TVET institutes about 25% students were girls, and out of the total 51 thousand teachers only 20% are female. The prevailing formal TVET system (other than the non-formal short courses of less than 360 hours courses) requires completion of class-VIII at the entry level and thus excludes those who were school dropouts, out of school boys and girls, rural poor young - a large potential group of target beneficiaries.

The rural population had less opportunity to pursue TVET as most of the training facilities were concentrated in the urban areas. Most trades were male oriented and lacked any provision for inclusion of disabled persons. The gender and equity issues are addressed through the 'National Strategy for Promotion of Gender Equality in TVET 2012' and the 'National Strategy for inclusion of persons with disabilities in Skills

Development 2013'. NGOs and the development projects always put priorities on women and social inclusion in their skills and TVET development interventions. Labour force growth of 2.81% during 1974–2017 was faster than population growth (1.86%) due to a rapidly expanding young population (the demographic dividend) and increased labour force participation. However, only 22.8% workers have completed primary school education, and only 4% have vocational education. Recognition of Prior Learning (RPL) was one major step to expand the TVET access. But, the RPL certification at the Pre-Voc level has been stalled since 2014 because of the new regulations (e.g. NFE Act 2014) and the insufficient capacity of BNFE.

Management and Governance

Effective multilevel governance in the TVET sector in Bangladesh is of significant importance. This governance process should be based on inclusive vertical and horizontal interactions between stakeholders and linked to the increased effectiveness, efficiency, coherence, transparency, accountability and performance of TVET policies and systems.

The following are the key areas pertaining to governance and management of TVET in Bangladesh:

Institutional capacity: TMED is a relatively new public body within the Ministry of Education, and it covers both Technical and Madrasah education. TMED prepares its budget following MTBF against strategic objectives and activities. It has action plans for TVET sector development and for SDG-4 implementation. DTE is substantially understaffed for years. BTEB requires, among others, resources to develop and expand CBT courses. TMED, DTE and BTEB lack capacity related to results-based planning and monitoring, reporting, and financial management. There is also a very limited decentralisation and delegation of power at the local level empowering the public TVET providers at the local level for local resource planning, industry engagement and public private partnerships (PPP). Other sector bodies like NSDA, ISCs, and COEs are yet to be fully functional and effective.

Financing: A rough estimate by the World Bank shows that an investment of USD 600 million is needed to train the two million new entrants to the labour market. The actual estimated annual investment from public and private sources is about USD150 million, or enough to train only 500,000. The investment requirement will rise to USD 1.2 billion in 2025 to train 4 million new labour market entrants per year. TMED gets about 1.3% of the total national budget to cover both technical and madrasah education. Before increasing the sector financing, there is a serious need of institutional strengthening and financial management capacity building of the relevant public bodies on budget planning and on efficient budget utilisation.

Policy and legislations: The NSDP 2011 was due to be reviewed and updated in 2017 but has not yet been updated. 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 that need immediate attention are related to the RPL certification, training impartation, certification and accreditation of training providers.

M&E, data and information system: At present, TMED or DTE lacks a dedicated M&E and MIS department. The TMED Action Plan for SDGs makes a reference to its strategy to develop a results-based monitoring system for the delivery of TVET across all institutions. IMED is responsible for centrally managing the M&E of development projects, but they require quality inputs from the relevant departments.

Other than Household Income and Expenditure Survey, Labour Force Survey and web-based statistical reports on labour migration and remittances, there are no regular and systematic research reports on the TVET sector, labour market supply and demand, skills gaps, and tracer studies. Occasional studies carried out by public, private organizations and DPs are often project specific and incomparable with each other. The absence of a labour market research, skill gaps analysis, and a Labour Market Information System (LMIS) leave the training providers with no systematic records of job placements and a poor understanding of current and future labour market needs. This affects the revision of the TVET courses, developing market-responsive curricula and the expansion of the TVET access.

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1. The Daily Star. 38.3 % secondary students drop out in 2016. (May, 2017)
<https://www.thedailystar.net/business/news/bangladesh-track-becoming-6b-pharma-market-2025-1995741>
 2. data.banbeis.gov.bd. Chapter- Seven Technical and Vocational Education. (Accessed on February 2021)
<http://data.banbeis.gov.bd/images/ban007.pdf>
 3. europa.eu. Capacity4dev. TVET Reform Promotes Social Inclusion and Skills for Bangladesh. (February 2014)
<https://europa.eu/capacity4dev/articles/tvet-reform-promotes-social-inclusion-and-skills-bangladesh>
 4. World Bank. Institutional survey covering 357 accredited secondary and postsecondary TVET. 2016
 5. Asian Development Bank. Innovative Strategies in Technical and Vocational Education and Training for Accelerated Human Resource Development in South Asia: Bangladesh. (September 2015)
<https://www.adb.org/publications/innovative-strategies-tvet-accelerated-hrd-south-asia-bangladesh>
 6. Asian Development Bank. Innovative Strategies in Technical and Vocational Education and Training for Accelerated Human Resource Development in South Asia. (January 2014)
<https://www.adb.org/publications/innovative-strategies-tech-voc-education-training-human-resource-development-south-asia> (RETA 6337) – Bangladesh,2016))



**ANALYSIS OF
CURRENT AND
FUTURE SKILLS
GAPS AGAINST
LABOUR
DEMAND, AND
PRIORITISED
GAPS AND
HARD-TO-FILL
VACANCIES**

VIII. ANALYSIS OF CURRENT AND FUTURE SKILLS GAPS AGAINST LABOUR DEMAND, PRIORITISED GAPS AND HARD-TO-FILL VACANCIES

The primary industrial focus of the eight Economic Zones of this study is manufacturing. This is evident across RMG, Pharmaceutical, Automotive, Steel and other industries at the focus of this Training Needs Analysis.

Therefore, when looking at the current and future skills gaps, or skills shortage in the labour market, it is important to understand the definition and then look at the impact on the manufacturing sector.

There are two types of skills shortage, both of which will play a role in the skilling dynamic of the Economic Zones in Bangladesh.^[1]

1. External: A situation where there is a genuine shortage in the accessible external labor market of the type of skill being sought, and which leads to a difficulty in recruitment.
2. Internal: A situation, where existing employees with a certain skill set are insufficient to meet the constantly changing business objectives. Often driven by technology.

It is also important to acknowledge that the manufacturing industry is predominantly built on at least basic STEM (Science, Technology, Engineering and Maths) skills.

Globally, the manufacturing industry is struggling to find and recruit the right talent. In Europe over 40% of companies are facing a shortage of skilled workers, and 10% in low-skilled workers.

As outlined in this report, Economic Zones are severely impacted by COVID-19. This has slowed the demand for manpower in the short term (1 year), as the majority of the plots and factories have not yet been built. From a developer perspective, as plots are allocated and construction of factories starts, there will be a consistent increase in employment at the EZ's, however primarily in the area of infrastructure management and construction.

From an investor perspective there will be extensive recruitment taking place across all eight EZ's from the end of 2021 and into 2022 and further into the future. This recruitment will cover a broad range of skill sets across unskilled, and skilled positions.

For the majority of 2021 and 2022, investors will look to source workers from the existing market, both fresh out of school, and those with experience. When looking at the existing NTVQF, a lot of work has been done to cater for some specific sectors, namely RMG (Textiles), Leather and agri-business. These industries have a long history in Bangladesh and have therefore developed strong training platforms that feed talent into the industry. It is therefore expected that the RMG, leather, construction, pharmaceutical and agri-business industries of the EZ's will be able to source talent more efficiently than others. Steel, Chemical, Automotive, Ship Building are relatively new industries in Bangladesh and therefore do not have as solid a foundation as others.

Projected Skill Gaps of Economic Zones

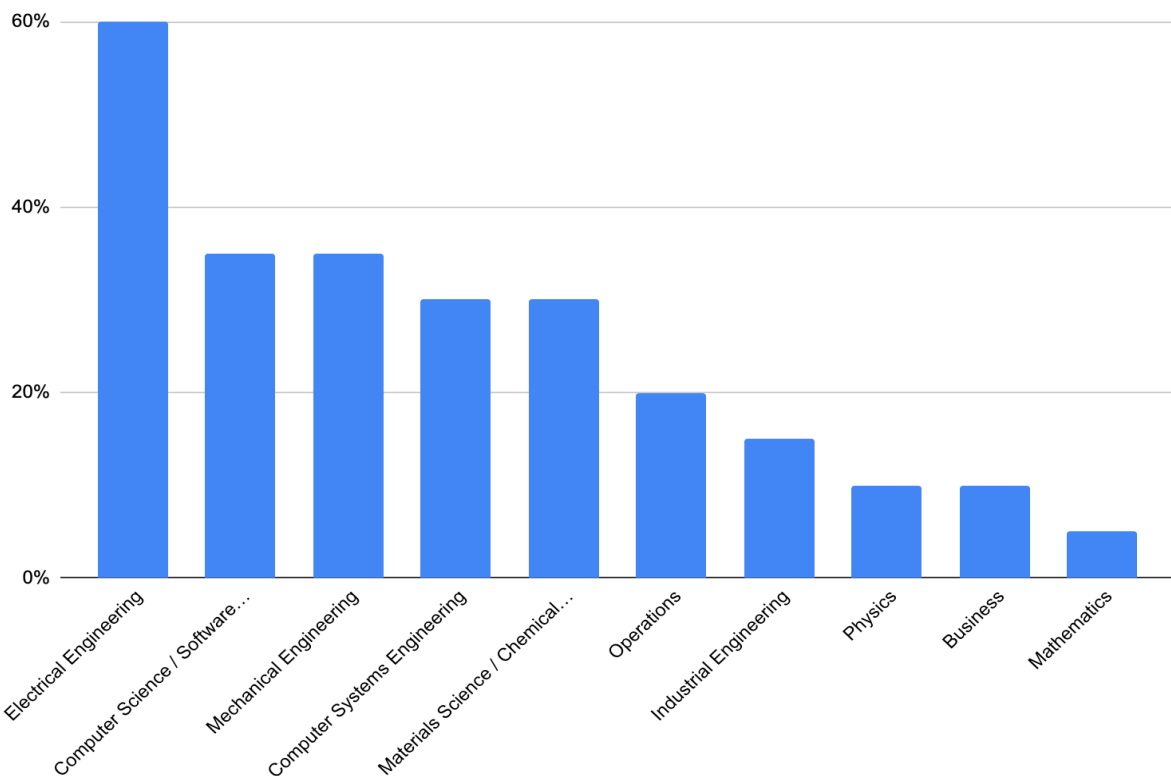
In general it can be assumed that the existing training structures in Bangladesh will be able to provide the RMG, Leather, Pharmaceutical and Agri-business sectors with the majority of manpower required. However for newer sectors including Chemical, steel, automotive parts and shipbuilding there will be more short term challenges in recruiting skilled manpower. The immediate shortages will be particularly acute in the following areas:

1. Skilled Production Workers
 - a. Welding
 - b. Machining
 - c. Equipment Operations
 - d. Chemists

In general there will be strong demand for production specialists across all the industry sectors. As operations ramp up and more factories come into operation there will also be an internal talent war that starts to appear. Without the proper supply of skilled professionals this will result in increased wages and a lack of competitiveness.

The following chart provides an insight into the talent shortfall experienced by executives across both developed and developing markets.

Manufacturing and Engineering talent shortages. Average percentage shortfall



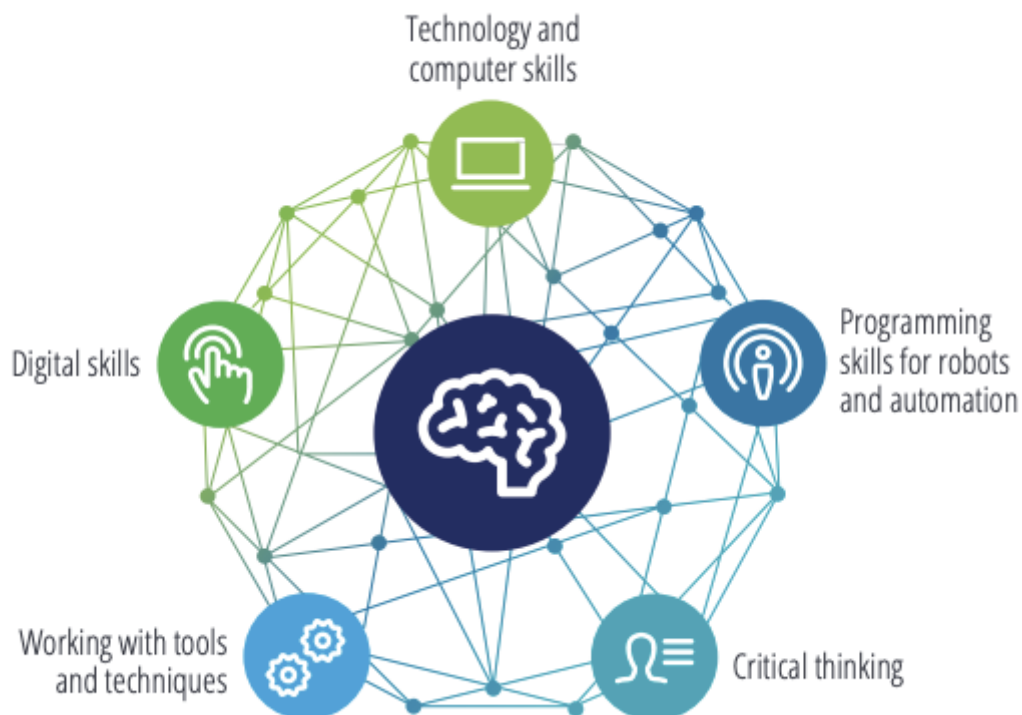
(Source: Deloitte 2017)^[2]

It is important to establish on-site training centers that can train and certify larger numbers of workers, with more industry specific skills.

Moving forward it is clear that the skills gap will become more digital, both in terms of new recruitment and upskilling of the existing workforce.


The following skills are already seeing a dramatic increase in demand.

Five Key skills expected to be needed for success in the fourth industrial revolution



Source: Deloitte Analysis^[2]

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1. Hogarth, T., Wilson, R.: Employers Skill Survey: Skills. Local Areas and Unemployment, Nottingham: Department for Education and Skills, DfES Report SK 39 (2001)
 2. 2018 Deloitte skills gap and future of work in manufacturing study (Accessed in February 2021). https://www2.deloitte.com/content/dam/insights/us/articles/4736_2018-Deloitte-skills-gap-FoW-manufacturing/DI_2018-Deloitte-skills-gap-FoW-manufacturing-study.pdf



**ANALYSIS OF
THE
IMPORTANCE OF
CORE SKILLS
AND
BEHAVIOURS**

IX. ANALYSIS OF THE IMPORTANCE OF CORE SKILLS AND BEHAVIOURS

Core skills are the fundamental, portable skills that are essential to conveying and receiving information that is critical to training and workplace success. These skills are core in that they serve as a basis—the foundation—for supporting additional operations/tasks and learning. They are portable because, rather than being job specific, they can be applied at some level across a wide variety of occupations. Workers who develop these skills have enhanced employability and are more competitive in the job market. Reading a manual, listening to instructions, writing a memo, and working well in a team are all examples of using foundational skills on the job.

- Core skills are important across a wide variety of jobs, both skilled and professional. For example, the work of both plumbers and physicians requires listening skills. Plumbers listen to their customers' descriptions of plumbing problems to help determine the source of the problem. Physicians listen to their patients describing symptoms to help make the correct medical diagnosis.
- Core skills are also necessary to learn more job-specific knowledge and skills. This is true across a wide variety of skilled and professional jobs. For example, both plumbers and physicians rely on reading to obtain additional job knowledge and skills. Plumbers read instructions and interpret schematics to learn how to install new drain systems, whereas physicians read research on drug trials to understand the strengths and limitations of new medicines that they prescribe

In Vocational Education and Training, the distinctive feature of key competences is that they are not directly linked to a specific qualification but can be used flexibly in different situations, both in further learning and in the labour market. Key competences often overlap with competences directly linked to a specific sector/occupation. For example, using a foreign language may not be a standard requirement in automotive technicians, while most qualifications in the tourism industry require knowledge of at least one foreign language. In the first case, a foreign language is a key competence; in the second, it can be seen as a key competence that overlaps with a vocational competence.

According to recent research carried out by CEDEFOP (UK NARIC, 2016^[1]), eight key competencies (foundational, core) are defined, that are essential to continued learning and development.

1. Literacy
2. Language, Mother Tongue and Secondary languages
3. Mathematical, Science, Technology, Engineering
4. Digital Literacy
5. Personal, Social and Learning
6. Civic
7. Entrepreneurship
8. Cultural Awareness and Expression

When examining the survey data from the eight Economic Zones, it can be seen that there is a general requirement for skills that are 'core' in nature. These core skills are seen as a critical component in being able to successfully complete tasks, continue to learn and develop a progressive career. To break this down further and to provide an overview of core skills that should be mapped into curriculum, the following table provides a clear overview. The data is compiled from sources across a range of both developed and developing countries, including Australia and India.

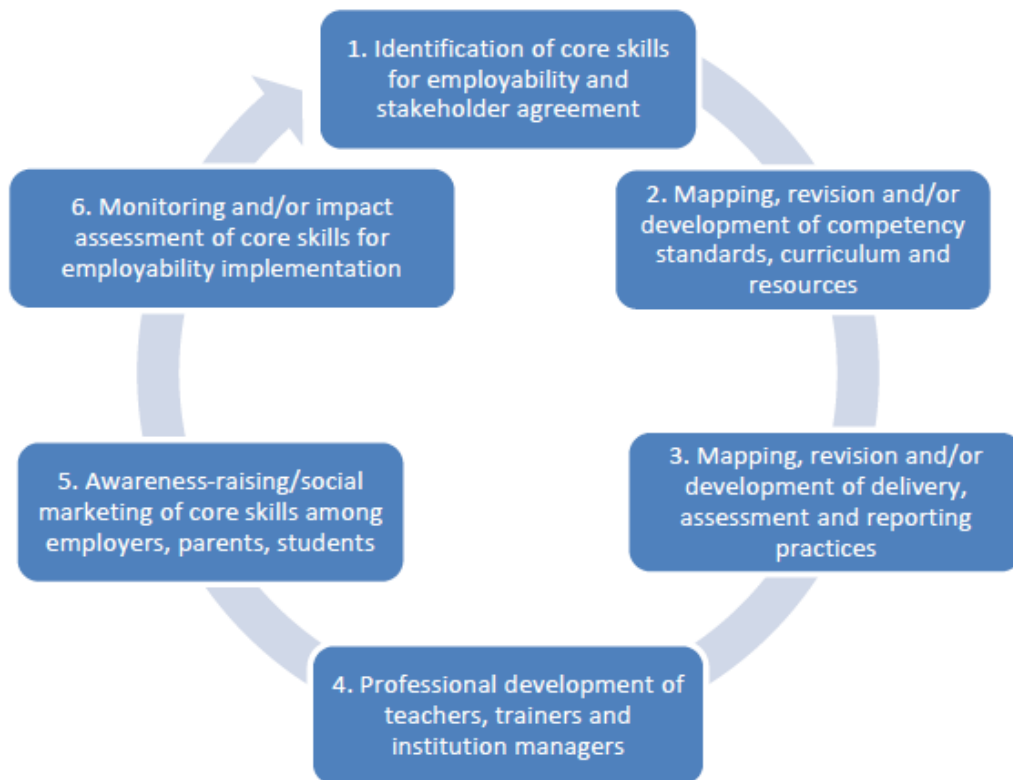
Core Skills for Employability

Broad Skill category	Core work skills / abilities
Learning to Learn	Willingness to learn
	Using learning techniques to acquire and apply new knowledge and skills
	Working safely
	Pursuing independent learning
	Thinking abstractly
	Organizing, processing and holding information
	Interpreting and communicating information
	Conducting systematic enquiry, following through to find answers
	Using time effectively and efficiently without sacrificing quality
	Selecting the best approach for tasks
	Beginning, following through and completing tasks
	Being adaptable
	Communication
Reading, understanding and. using materials, including graphs, charts and displays	
With	Understanding and speaking the language(s) in which the business is conducted
	Writing effectively in the language(s) in which the business is. conducted
	Writing to the needs of an audience
	Listening and communicating effectively
	Listening to understand and learn
	Using numeracy effectively
	Articulating own ideas and vision
	Teamwork
Working in teams or groups	
Interacting. with co-workers	
Respecting the thoughts. and opinions of others in the group	
Working within the culture of the group	
Understanding and contributing to the organization's goals	
Planning and making decisions with others and supporting the outcomes	
Taking accountability for actions	
Building partnerships and coordinating a variety of experiences	
Working towards group consensus in decision-making	
Valuing others' input	
Accepting feedback	
Resolving conflicts	
Coaching, mentoring and giving feedback	

	Leading effectively
	Mobilizing a group for high performance
Problem-solving	Thinking creatively
	Solving problems independently
	Testing assumptions
	Identifying problems
	Taking the context of data and circumstances into account
	Identifying and suggesting new ideas to get the job done (initiative)
	Collecting, analysing and organizing information (planning and organization)
	Planning and managing time, money and other resources to achieve goals

Source: Brewer, 2013^[2]

When looking to implement a comprehensive Core Skill development strategy, the following cycle should be considered as a good baseline when addressing different stakeholders.



Source: Brewer, Comyn (2015)^[3]

When comparing the focus industries of this TNA, it is clear that there is a foundational comparability between them. All industries are related to the manufacturing or assembly of products, and rely on a steady supply of manpower to ensure delivery and competitiveness.

As an example, when looking at the German vocational training structure, the first year of training ensures that all students have a foundational knowledge of the following learning fields.

1. Manufacturing components with hand tools
2. Manufacturing of components with machines
3. Manufacturing of simple assemblies
4. Maintenance of technical systems

Importantly, the German system also focuses on ensuring the development of core competences alongside technical competences. For example, the focus of the German Vocational system model is to develop the following competences that fall in line with core skills. This is seen as critically important to ensure the employability of students following their studies, and enabling them to progress in technical careers or further education.

Competence to act, develops in the dimensions of professional competence, human competence (personal competence) and social competence. Professional competence refers to the willingness and ability to solve tasks and problems in a goal-oriented, appropriate, methodical and independent manner on the basis of professional knowledge and skills and to evaluate the results.

Personal Competence refers to the willingness and ability as an individual personality to clarify, think through and assess development opportunities, requirements and restrictions in family, work and public life, to develop one's own talents and to make and develop life plans. It includes personal qualities such as independence, critical faculties, self-confidence, reliability, sense of responsibility and duty. It also includes, in particular, the development of well thought-out values and self-determined commitment to values.

Social competence, describes the willingness and ability to live and shape social relationships. The ability to grasp and understand attitudes and tensions, as well as to deal with and communicate with others rationally and responsibly. This includes in particular the development of social responsibility and solidarity.

Methodical competence grows out of a balanced development of these three dimensions.

This foundation ensures that there is a solid foundational knowledge that allows for further specialization in different manufacturing areas.

The TNA also provides insights into the distribution of the workforce within a company, taking into consideration, Unskilled, Semi-Skilled, High Skilled and Professional categories. On average across the EZ's there is an expectation that Unskilled and Semi-skilled workers will make up over 65% of the workforce. This shows the importance of career development, both in terms of technical skills, but also social, leadership and teamwork, all of which are important core skills.

The quality of jobs has a direct correlation to the opportunity for career progression, and therefore requires core skills to be a fundamental part of training throughout the employment cycle.

Digital Literacy, according to UNESCO, Digital Literacy is defined as "the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital technologies for employment, decent jobs and entrepreneurship. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy and media literacy."

As we can see throughout this TNA, the importance of digital literacy is increasing rapidly. Digital transformation will impact all industries and push workers to learn new digital skills to enable them to operate machines, automate processes, manage data and so on. Take the automotive industry for example.

The most important skill today is to understand semiconductors, not steel, rubber, and engines.

As a core skill, digital literacy will be essential to the next generation of professionals entering the workforce. Being able to use different digital technologies, manage data and understand programming language will be a prerequisite for many jobs.

It is therefore highly important that Bangladesh integrate digital literacy as a core skill through the educational frameworks of the country, importantly also including vocational training disciplines.

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1. UK NARIC. (2016). Key competences in vocational education and training – United Kingdom. Cedefop ReferNet thematic perspectives series. http://libserver.cedefop.europa.eu/vetelib/2016/ReferNet_UK_KC.pdf
 2. Brewer, L. 2013. "Enhancing the employability of disadvantaged youth: What? Why? and How? Guide to core work skills", Geneva : International Labour Organization.
 3. Brewer, L. Comyn, P. 2015. "Integrating core work skills into TVET systems: Six country case studies", International Labour Organization.



**ENHANCING
WOMEN'S
PARTICIPATION
IN THE EIGHT
ECONOMIC
ZONES**

X. ENHANCING WOMEN'S PARTICIPATION IN THE EIGHT ECONOMIC ZONES

Although the female labour force participation rate (LFPR) in Bangladesh during the period 2000 to 2017 increased from 23.9 per cent to 36.3 per cent, women's participation in the Bangladeshi labour force remains low. In the last decade especially between 2010 to 2017, female LFPR stagnated at around 36 per cent.^[1]

This lower labour force participation and employment is due to various factors such as lack of skills, deficient workplace infrastructure, gender discrimination in the labour market, and issues of safety and sexual harassment.^[2]

The garments sector has been an exception and attracts the highest number of women. A recent survey conducted by Mapped in Bangladesh, a research initiative of BRAC University, showed that the ratio of female to male workers now stood at 58.30 per cent. Most families rely on male breadwinners, with 36% of women compared to 82% of men in the labour force.

The gender gaps in labour force participation are particularly pronounced in the science, technology, engineering and mathematics (STEM) sectors. Women are facing constraints to accessing quality jobs. One of the main constraints is the lack of skills that lead to quality jobs. For example, women account for only 28% of graduates from tertiary education and 20% of graduates from STEM fields. Some of the constraints include lack of access to finance, markets, information, and networks as well as safety and sexual harassment issues along with deficient workplace infrastructure.^[3]

By placing more emphasis on career guidance, skills training and job placement for women, women's employment can be enhanced manifold.

Building Effective Women's Economic Empowerment Strategies

The information technology services (ITS) and information technology-enabled services (ITeS) sector demand for the digital delivery of services—from telemedicine to e-payments—which has been accelerated by the pandemic, offer new business opportunities. As more traditional businesses adapt digital platforms and use ITS and ITeS to improve operations. There is an increasing demand for facilities offering connectivity, funding, market access, and physical and virtual workspaces for digital entrepreneurs. Estimates suggest that four out of five ITS and ITeS businesses operate from non-commercial or residential areas. The sector has the potential to create a lot of jobs for educated women, providing a unique opportunity to promote female employment and entrepreneurship in the ITS and ITeS sector, which is generally lower than in some other sectors.^[4]

The key to strengthen the foundation of the digital ecosystem across the eight economic zones will be to promote digital literacy more broadly among women.

The Information and Communications Technology (ICT) sector will play a major role in improving the lives of women through better access to market, knowledge and networks.

Attracting and retaining female employees at all job levels might be challenging but providing better parental leave policies, investing in science and technology education for girls will unlock more opportunities for women in the manufacturing and agriculture and other sectors.

Expanding efforts to improve women's financial literacy, providing better savings and credit options, and offering training and mentoring programs will improve women's access to and use of financial products and services.

Tackling Common Barriers to Progress

- Implementing policies and setting up ideal structures, quotas and programs for promoting women to enter and remain in the workforce
- Collecting meaningful data, monitoring, evaluating and reporting women's empowerment initiatives.
- Encouraging companies to create cross functional teams and set up common goals around women's economic empowerment.
- Ensuring access to high quality education and healthcare, providing women with the knowledge, tools, and power to make decisions for themselves.
- Dedicated mentoring and startup support programs could be started for women entrepreneurs

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1. Employment, Labour Force Participation and Education: Towards Gender Equality in Bangladesh, Centre for Development and Employment Research (CDER) and Friedrich-Ebert-Stiftung (FES) Bangladesh Office, 2019
 2. NewAge Business. *Number of female workers in RMG sector falling: surveys*. (December, 2020)
<https://www.newagebd.net/article/124375/number-of-female-workers-in-rmg-sector-falling-surveys>
 3. The World Bank. Bangladesh Private Investment And Digital Entrepreneurship Project (P170688). (Accessed in February 2021).
<http://documents1.worldbank.org/curated/en/294571582949790657/pdf/Project-Information-Documents-Bangladesh-Private-Investment-Digital-Entrepreneurship-Project-P170688.pdf>
 4. BSR. ICRW. Building effective women's economic empowerment strategies. (Accessed in February 2021).
https://www.bsr.org/reports/BSR_ICRW_Building_Effective_Womens_Economic_Empowerment_Strategies.pdf

An aerial photograph of a densely populated urban area, likely in South Asia, showing a mix of multi-story apartment buildings and smaller structures. A large, semi-transparent blue rectangle is overlaid on the left and center of the image, containing white text. The text is arranged in a vertical stack, reading from top to bottom: 'A DESCRIPTION OF COMMONALITIES IN EZ TENANT AND PROSPECTIVE INVESTOR STRATEGIES'. The background image shows a river or canal at the bottom, and the city extends to the top of the frame.

**A DESCRIPTION
OF
COMMONALITIES
IN EZ TENANT
AND
PROSPECTIVE
INVESTOR
STRATEGIES**

XI. A DESCRIPTION OF COMMONALITIES IN EZ TENANT AND PROSPECTIVE INVESTOR STRATEGIES

From the responses captured through the Investor survey, it can be observed that digital and IT skills are much in demand and have been highlighted by most EZ tenants (investors).

When asked about the skills & capabilities required by workers in the digital era, Office IT skills for word and data processing and use of communication and collaboration tools together accounted for 41% of the responses.

In response to the question on the top 3 critical skills for the future, 'Automation' emerged as the top skills with 61% response rate and Data Analytics was the second most important skill with approximately 13% response rate. Both Automation and Data Analytics today depend very heavily on the use of technology and software tools, thus further highlighting why digital skills are increasingly becoming the 'base' skills to access higher level skills.

Analysis of the Covid-19 impact on the demand of new skills also reveals that 58 % respondents agreed that the pandemic has in fact led to the demand of new skills. Digital Engagement, Project Management and IT were mentioned as the top 3 new skills. This again points to the rising importance of digital skills. With regards to the strategies that EZ tenants/investors are adopting for identifying and sourcing such skills, personal references remain the top source for hiring new workers. However, Media advertisements and Internet websites are the next most important sources for hiring new workers. This is likely to grow further as COVID-19 is pushing hiring processes to move online including soliciting new candidates, conducting virtual interviews and online assessments.

In this context, It may be worthwhile to explore the creation of an online marketplace to support the skilled worker requirements of all EZ tenants. Such a platform supplemented by a mobile app could support the workers to create their profiles, connect with EZ employers, provide proof of their work history and educational and training credentials as well as undergo a remote selection/assessment process. This may dovetail with the proposed skill voucher scheme and could support the beneficiaries to achieve job placements within economic zones. The analytics generated by the online platform would also be valuable in tracking and monitoring of the voucher program.

1.



IMPLICATIONS FOR VOUCHER SCHEME

XII. IMPLICATIONS FOR VOUCHER SCHEME

BEZA aims to establish economic zones in all potential areas in Bangladesh including backward and underdeveloped regions with a view to encouraging rapid economic development through increase and diversification of industry, employment, production and export. Economic zones would have a higher likelihood to flourish if there is a skills ecosystem that provides a pipeline of skilled, motivated, and adaptable workers for the prospective investors.

Thus, a mechanism that can address the industry-relevant skills shortages by enabling the private sector to participate in the funding and delivery of skills training would play an important role in convincing investors to set up shop in the various economic zones. A skill voucher system could be one such mechanism.

A skill voucher is an instrument given to an individual which enables her/him to obtain training from any training institute accredited with the provider of the voucher. The most prevalent model for skill vouchers involves individuals obtaining vouchers from the state, attending training courses of their choice, and paying for the courses via vouchers with a small contribution from their own pocket. Once the training has been completed, the training institutions in the program redeem the vouchers for cash. There can be various ways of designing a skill voucher program to achieve the desired objectives. Some of the key considerations include:

- Defining the target beneficiaries and outcomes such as training completion, certification and job placement
- Defining operational and quality parameters that feed into a monitoring and evaluation framework
- Outlining processes related to redemption/reimbursement of vouchers
- Other support functions such as information dissemination and registration, career guidance etc. important for the success of the program

If designed well, the voucher program could certainly enable the economic zones to access and hire skilled workers. At the same time, it is likely to also have a significant effect on the overall quality of the skills training delivery (as only accredited training providers who pass the due diligence standards would be allowed to participate in the voucher program), raising the bar for training curriculum and standards (since the voucher program would prioritise curriculum and certification which is meaningful to employers) and improvement of training outcomes since full reimbursements would be subject to attainment of jobs/self employment. Moreover, while the voucher program is designed to be a demand side intervention, it is likely to catalyse the supply side of the skills market, especially since EZs will make land and utilities available to education investors on a similar basis to other EZ investors.

The voucher program should be looked upon as an opportunity to also tackle and resolve some of the other challenges that the Bangladeshi skills development ecosystem already faces. For instance, the voucher system can be designed to specially incentivize and therefore improve access and equity. This could ensure that more women, rural youth and people with disabilities enrol in TVET programs and eventually find gainful employment within economic zones. Robust monitoring and evaluation of the voucher system could in turn push for better labour market research, skill gaps analysis and tracer studies and also ensure systematic tracking of job placements by both public agencies and private training providers.

To achieve better gender outcomes, the voucher program could have specific targets for improving female labor force participation. For instance, a gender quota could be proposed for male-dominated industries (where women account for less than 15 percent of employees) and special incentives could be provided for those EZ tenants that train, hire and retain women staff above a certain threshold percentage of their total workforce.

The image features a dark, cracked concrete background. A large, semi-transparent blue rectangle is positioned on the left side, partially overlapping a white, five-pointed star that is painted on the concrete. The star is located in the upper right quadrant of the image. The text 'OUTCOMES AND CONCLUSIONS' is written in white, bold, uppercase letters across the blue rectangle.

**OUTCOMES
AND
CONCLUSIONS**

XIII. OUTCOMES & CONCLUSIONS

This Training Needs Analysis has provided a great deal of insight into the current status of eight Economic Zones and the focus industries that make up their future growth. The following provides a brief summary of the findings of this report and some recommendations for further development.

Quality of data and recommendations for further analysis.

Currently, there is a lack of presence on the ground in the majority of Economic Zones. This is in part because of the impact of COVID-19 and has resulted in a general delay in construction and plot allocation. This lack of 'maturity,' on the ground, created a gap in knowledge and understanding of the skill requirements of investors. Moving forward it is recommended to extend support to new investors to help understand their skill requirements as early as possible in the process of establishing their operations. This will help to accurately forecast manpower requirements, to a more specific level, with a focus on job roles and their associated skill and competency profile.

Commonalities and opportunities for collaborative training, apprenticeships and intercompany training centers

When examining the focus industries in detail, it is clear that there is a strong foundational skill overlap between many of them. Basic skills, in tools, machinery, maintenance, mechanics, and electrical systems are common, and present an opportunity to collaborate across sectors to build a strong foundational workforce that can then specialize into industry specific job roles. This in turn opens the door for an apprenticeship structure to be developed with each of the Economic Zones. To support companies within Economic Zones, there is also a strong case for the creation of intercompany training centers, which also helps tackle the challenge posed by the diverse geographic spread of the Economic Zones. These intercompany training centers can be set up by industry associations that represent the demands of the industry. This will ensure sustainability of the talent pool for each Economic Zone, independently from one another. This would reduce competition for workers and overtime significantly increase the quality of the workforce, while also improving job satisfaction. The Saudi Arabian case study is a good example of this.

Digital skills for the future.

All industries are facing a major impact from digitalization. The speed at which manufacturing processes are changing has never been faster, and this has a major impact on the skills required by the workforce. The report outlines how global industries are already massively increasing their digital talent pool, with IT roles and automation roles dominating recruitment trends. While Bangladesh will not be as fast as other more developed countries to adopt these new technologies, the Economic Zones will be faced with increasing pressure to digitize operations. This will lead to a significant increase in skill demand. As such it is highly recommended that digital literacy becomes a core element of all training, both on the job and through standard training schemes. The Bangladeshi government is focusing extensively on building a strong ICT backbone, and this should feed into the manufacturing sector as well.

The importance of core skills

Core skills are often overlooked, when discussing technical skills and vocational training. However, it is these core skills that enable people to build a career, learn new skills, communicate effectively and add value to a business. The survey data outlined, a significant lack of skills such as time management, leadership, and communication as desirable skills. In the current environment, where the only thing that is

constant is change, it is important to ensure that employees are adaptable, innovative and willing to change. Without these core skills it will be difficult to create quality jobs that will result in job satisfaction.

For better quality jobs, higher level skills need to be defined as per the NTVQF framework

Considering the existing training framework in Bangladesh, it is expected that the short term skill requirements, particularly for entry level jobs can predominantly be met. However the majority of occupational standards do not progress past the NTVQF Level 5, which leads to a lack of skilled and highly skilled occupational standards that can support the continued technical development of industries. While there is work ongoing to revise the framework to include an 8 level hierarchy (similar to that of the EU), it is important to facilitate this adaption in the short term to manage the greater demand that will come. As previously mentioned this is also critical to adapt the framework to consider ICT roles, Automation, Data Analytics and Software Development.

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1. Drivers of Changes in Labour Market Demand

a. Access to Quality Jobs

Job quality is typically measured based on sector information, including, status, formality and wage level of the job. Evidence shows that the likelihood of working in agriculture decreases as education levels increase. In the service sector, wage increases are also strongly associated with higher levels of education. As Economic Zones increase the number of formal and informal jobs, it is important to understand how, and to what extent, education and training play a part in economic growth.

b. Shifting Demographics / Dynamic Workforce

Trends like aging and declining birth rates mean the days of abundant labour are drawing to an end in much of the world. Sixty percent of people now live in countries with stagnant or shrinking workforces. This labour market driver plays an interesting role for Bangladesh, as International job placements will continue to play a major role, and EZ's will have to entice, develop and encourage talent to stay. Youth are benefiting from rapidly improving educational outcomes as well as increases in better forms of employment, which are translating into improved earnings. The increase in earnings over time is likely associated with the expansion of education.

c. Rise of the Female Workforce

In Bangladesh, both men and women have achieved significant progress in education over time, but women's progress was more rapid, and the gender education gap declined substantially. With the right infrastructure and support structures, EZ's have a significant opportunity to bring more females into the workforce and in doing so gain a much broader access to talent. RMG in particular is a major employer of women. Several of the EZ's have a focus on developing the RMG sector. Vocational training and core skills should continue to be developed to develop gender equality in other focus industries.

d. Rise of Individual Choice

With millions of job postings just a click away, it is easier to shop around for work; most millennials expect to pursue multiple careers and change directions a few times over their working lives. Bangladesh is at the beginning of the digital revolution. From an employment perspective, digitization will have a major impact on sourcing and hiring and engaging talent. Job shifting for minimal increases in salary will also increase.

e. Technology Impact

As a result of rapid technological change, companies today face shorter business cycles and truly global competition. Few industries are safe from disruption. Automation, facilitated by better artificial intelligence, is poised to have a major impact on jobs. Additionally, Bangladesh's government-led initiatives, including the Digital Bangladesh program, make Bangladesh an attractive destination for emerging technologies.

f. Data Driven Recruitment

Talent management has gone from an art to a science as organizations start applying big data and supply chain sophistication to recruiting and retention. The goal is greater efficiency and productivity, and it is transforming how companies think about talent. As the EZ's look to attract foreign investment, international companies will bring data driven recruitment practices with them. To enable efficient sourcing, efforts should be made to enhance digital talent management and recruitment.

g. Competition and Globalization

In summary, the combination of trade liberalisation (or globalisation) and the development of new technologies which facilitate the creation of complex, international supply chains is perhaps the greatest driver of change for the future. There will, inevitably, be a range of products and services which need to be produced and consumed locally, but increasingly high value goods and services produced within complex, international supply chains will drive growth in the economy. This is currently a major opportunity for Bangladesh, taking RMG as an example. However for other more technologically advanced industries, this opportunity will only exist if Bangladesh can remain competitive. This will be driven by a skilled and digital savvy workforce.

h. COVID-19 Impact on the Economy

COVID-19 has had a dramatic impact on economies all over the world. However the informal sector has seen the hardest impact. Those working in logistics, transport, construction and low skilled jobs have seen jobs and livelihoods disappear overnight. Bangladesh like other South Asian economies relies heavily on the informal sector. COVID-19 affects Free Zones through different channels, including the domestic measures to contain the virus, the drop in global demand, supply chain disruptions and a deterioration in the financial environment. Despite the impact of COVID, the focus on growth in EZ's will create new jobs and bolster other areas of the economy. BSMSN for example is expected to generate in excess of 0.4 million jobs in the short term with infrastructure development at the core of this growth.

Labour markets are in a constant state of change. Influenced by domestic and international trends, it is critical to plan ahead and look at the short and long term. Today's challenges can lead to tomorrow's opportunities, with the right planning, people (skills) and infrastructure.

2. Detailed Snapshot of Eight Economic Zones

1. Bangabandhu Sheikh Mujib Shilpa Nagar (BSMSN)



BSMSN is being developed on a contiguous land of 30000 acres of Mirsarai, Sitakundu and Sonagazi Upazilas of Chittagong and Feni. Strategically located on the Dhaka-Chittagong industrial corridor, BSMSN is suitable for setting up industrial establishments. The high quality business friendly environment is posed to contribute positively in shaping Chittagong into a leading regional business hub.

BEZA's target from BSMSN is to ensure employment for 1.5 million people over the next 15 years. This government-owned land is well connected and has great potential for expansion.

To ensure uninterrupted economic development, the Bangladesh government is constructing coastal embankments to protect the area from flood, erosion and other natural disasters. Additionally, it is also investing in infrastructure, including construction of dedicated roadway, motorable pavement, water reservoir, gas

distribution network, and more to drive sustainable growth.

The development of the EZs are happening in phases:

Mirsarai Economic Zone (Phase-1): 1st Phase is the first multi-sector EZ in the country encompassing an area of 550 acres. The area is being developed by the PowerPac-East West-GasMin Consortium.

Mirsarai Economic Zone 2A: 2nd Phase is being developed on an area of about 900 acres. The plots in the zone have been allotted to Kiswan, Integra Apparels, Reza Fashion, Naf Apparels, Green health, Juhana Textile, Orchid Energy, Gas-1, Fawn International and Great wall Ceramics, with an estimate to generate 0.2 million jobs through this zone.

Mirsarai Economic Zone 2B: 3rd Phase is located next to Mirsarai EZ 2A and Mirsarai Phase-1 on an area of about 500 acres.

Major investments in Mirsarai EZ are:

- BEPZA Economic Zone- Mirsarai - Bangladesh Export Processing Zone Authority (BEPZA) has been allotted 1150 acres of land in Mirsarai EZ.
- BGMEA Garments Park - Located next to the Mirsarai EZ 2A and Mirsarai 1st Phase on 500 acres of land, Bangladesh Garment Manufacturers and Exporters Association (BGMEA) will be setting up a well-planned ready made garment factory. BGMEA is expected to invest \$2 billion for setting up RMG and garment accessories factories at this park to generate employment for 0.5 million people.

- Bashundhara Industrial Economic Zone in Mirsarai - Bashundhara Group is going to invest US\$ 500 million on 500 acres of land. The group will set up an ultra-modern pulp, paper and board mill generating 10,000 jobs.
- Ananta Group in Mirsarai - A leading apparel exporter, Ananta Group is going to set up six factories to produce fabrics and yarn on 250 acres of land. The company will invest about BDT 3500 Crore and is expected to generate 25000 employment opportunities.
- Kunming Iron & Steel Holding Company Limited, a state owned company is going to invest 2.13 billion to establish an Iron and Steel Industries Park.

Suitable Industries: Garments and garment supporting industries, agro-products and agro-processing products, integrated textiles, leather and leather products, shipbuilding, motorbike assembly, food and beverage, paint and chemical, paper and products, plastics, light engineering (including auto-parts and bicycles), pharmaceutical products, power and solar park.

2. Japanese Economic Zone (Araihazar EZ) / (JEZ)

As a joint venture project based on the G2G provisions of the Bangladesh Economic Zones Act 2010, Government of Bangladesh established a Japanese Economic Zones (EZ) in cooperation with Japan International Cooperation Agency in the suburb of the capital city, Dhaka.

Located in Araihazar Upazila of Narayanganj district, the land allotted for this project is 1000 acres and will be developed by Sumitomo Corporation. This EZ would be able to accommodate around 200 companies with an employment projection of 0.1 million.

Land development work is yet to start due to the Covid-19. However, the Environmental Impact Assessment and Feasibility Study of this economic zone have been completed and BEZA would start allotting plots in the Araihazar EZ by September 2021.

Suitable Industries: Agro-food, light engineering, Chemical, Automobile assembly, garments, pharmaceutical.

3. Meghna Industrial Economic Zone (MIEZ)

MIEZ is situated right beside the Dhaka-Chittagong Highway in the Sonargaon Upazila of Narayanganj district. Situated on 110 acres, this zone is developed for industrial construction and operation with levelled up land and a road network. Construction of utility facilities like electricity, gas and water are in progress.

MIEZ is well-connected by road, river, rail and air. It has uninterrupted supply of electricity, gas, water, CETP along with modern amenities like Investors Recreation Club, Convention Hall and a Helipad. In addition, it has an Effluent Treatment Plan and top-notch security system implemented for safe operations of all industries.

MIEZ has actual investment by the following industries:

SL No	Industry Name	Investment (USD in Million)	Products	Export oriented	Employment Projection

				Export USD Million)	Country	
01	Meghna Beverage Limited	31.25	Carbonated beverage, soda water, mineral water	NA	NA	
02	Unique Cement Fibre Industries Ltd	12.05	Fibre bags, jumbo bags	10% Export	India, France	
03	Sonargaon Steel Fabricate Ltd	14.27	Steel structure components- column, beam, rafter	NA	NA	
04	Meghna Noodles and Biscuit Factory Ltd.	3.80	Biscuits, Noodles, Chips, Chanachur, Candy, Chocolates, Wafers, Bread, Cake	10% Export	NA	500
05	Sonargaon Printing & Packaging Industries Ltd.	2.60	Corrugated Carton Box (Master & Inner Box), Sanitary Napkin, Baby Diaper			500
06	Tecleap Ltd.	1.256	ISP, Cloud Support, Data Centre support	NA	NA	

Suitable Industries: Beverage, food items, fibre bag, steel construction, plastic, packaging film, pharmaceutical bottles, garments accessories, plastic items and chemicals.

4. Abdul Monem Economic Zone (AMEZ)

AMEZ is situated 37 kilometers east of Dhaka city in Gazaria Upazila and Munshiganj District. Spread across 216 acres (with option for expansion up to 300+ acres), its master plan includes 6.5 kilometers of boundary walls, 10 kilometers of internal roads, 1.2 kilometers of artificial water body and jetty facility. Among 79 plots in the zone, 10 plots have been taken by Bangladesh Honda Private Ltd. and 2 by Sakata Inx. It holds a 33/11 KV substation and a mini water treatment plant and internal road network. A 2.75 MW capacity power plant is in progress.



AMEZ aims at providing an area with a congenial investment climate, generating 0.1 million employment opportunities for overall macro economic growth and development.

AMEZ's Infrastructure

- Industrial plot available for long-term or short-term lease
- Robust utility service (captive power plant for 24/365, water supply, Sewage treatment)
- Multi-modal transport and logistics (road, river and rail)
- Comprehensive administrative services

- Commercial facility services (financial institutions, retail shops and recreation centres)
- On-site housing for employees

Strength of Abdul Monem Ltd. (AML) as a developer of AMEZ

- Over five decades of experience in large scale infrastructure projects
- Largest construction equipment fleet of around 800 world class equipments
- Backward linkage: own production of auto-bricks, bitumen emulsion and asphalt ready-mix concrete
- Huge pool of human resource for different construction projects (around 7,000+ workers)
- IFAWPCA Gold medal for excellence in civil engineering construction from the Ministry of Communication

Suitable Industries: Motor parts assembling factories, industrial ink, environment-friendly high-value garments and related industrial units, textile and apparels, electronics and ICT, food processing, plastic, furniture, pharmaceuticals, and light engineering industries.

5. Bay Economic Zone

Located in the Gazipur Sadar Upazila of Gazipur district, Bay Economic Zone is spread across 65 acres. Bay is the oldest leather & leather goods related family in Bangladesh. It has moved to backward and forward linkage industries like mould manufacturing, sole manufacturing, and finished shoe manufacturing.

By providing adequate infrastructure, smooth utility supply, Bay is creating a favourable investment culture. The environmental impact assessment and feasibility study has been completed in the Bay Economic Zone. It holds two export-oriented factories and has erected employment of 975 workers.

Suitable industries: Leather and leather products, toy and packaging.

6. Kishoreganj Economic Zone (KEZ)

Situated on 91.63 acres of land in Pakundia upazila near the Bhairab-Kishoreganj Highway, KEZ is an initiative taken by the Nitol Niloy Group. A heavy automobile plant and a steel manufacturing plant is likely to be set up, expecting to create jobs for 15,000 people.

Suitable Industries: Garment and shoe manufacturing plants, Automobile and Steel factories.

7. Sirajganj Economic Zone

Established on the banks of the Jamuna River, Sirajganj Economic Zone is located on 1035.93 acres of land. It will operate as the most lucrative green economic zone in the country, creating 500,000 jobs.

This EZ is well connected to the northern part of the country by road, river, rail, and air. It is also connected to neighbouring countries India, Nepal, and Bhutan by the Burimari, Hili, and Banglabandha land ports and the Chattagram and Mongla sea ports.

Suitable industries: Textile and knitwear, food processing, pharmaceuticals, leather, automobile engineering, LPG manufacturing, steel manufacturing, and fisheries and ship building industries.

8. Hosendi Economic Zones in Munshiganj

Established at Gazaria Upazila of Munshiganj district on a land of 108 acres, Hoshendi Economic Zone, a concern of City Group, is expected to generate 15,000 direct and indirect employment as well as draw investments worth of US\$ 2.0 billion.

According to the project master plan, this private EZ will be an environmentally friendly industrial estate having adequate amount of green zone, open spaces, waste management facilities and Effluent Treatment Plant (ETP). It plans to build around 10 industrial units in the zones which include cement, salt and chemicals, ceramic, ship building and 100-MW power plant.

Recently, partnering with German and Swiss financial institutions, Prime Bank arranged foreign currency credit for setting up City Group's most advanced free-flowing iodised salt manufacturing project in this EZ.

Suitable industries: Salt, chemical, pre-fabricated building materials, cement, shipping, ceramic, light engineering, automobiles and paper mills.

3. Detailed Job roles for the 8 EZs in Bangladesh

As per ESCO (European Skills, Competences, Qualifications and Occupations) classification, the industries, sub sectors and job roles for the top eight sectors in Bangladesh could be mapped as follows:

Industry	Common Job Roles		
1. Textile	Textile Quality Inspector	- Braiding Machine Operator	- Fibre Preparing, Spinning And Winding Machine Operators
	- Textile Technologist	- Import Export Manager In Textiles And Textile Semi-finished And Raw Materials	- Handicraft Workers
	- Textile Machine Operator	- Technical Sales Representative In The Textile Machinery Industry	- Garment And Related Pattern-makers And Cutters
	- Textile Machinery Technician	- Nonwoven Textile Technician	- Tailor
	- Textile Sourcing Merchandiser	- Textile Process Controller	- Handicraft And Printing Workers
	- Textile Chemist	- Braiding Textile Technician	- Assemblers Not Elsewhere Classified
	- Textile Dyeing Technician	- Weaving Textile Technician	- Product Graders And Testers (Excluding Foods And Beverages)
	- Textile Operations Manager	- Made-up Textile Articles Manufacturer	- Metal Polishers, Wheel Grinders And Tool Sharpeners
	- Textile Printer	- Textile Specialised Seller	- Printers
	- Textile Chemical Quality Technician	- Knitting Textile Technician	- Toymaker
	- Textile Quality Technician	- Textile Shop Manager	- Sewing Machine Operators
	- Textile Quality Manager	- Spinning Machine Operator	- Sewing, Embroidery And Related Workers
	- Spinning Textile Technician	- Handicraft Workers In Textile, Leather And Related Materials	- Stationary Plant And Machine Operators
	- Textile Designer	- Clothing Technologist	- Cleaners And Helpers
	- Textile Finishing Machine Operator	- Fashion Designer	- Knitter
	- Textile Colourist	- Textile, Fur And Leather Products Machine Operators Not Elsewhere Classified	- Protective Clothing Apparel Manufacturer
	- Textile Pattern Making Machine Operator	- Textile, Fur And Leather Products Machine Operators	- Fire Safety Tester

	- Textile Product Developer	- Carpet Weaver	- Hand Launderers And Pressers
	- Import Export Specialist In Textiles And Textile Semi-finished And Raw Materials	- Carpet Handicraft Worker	- Domestic Cleaners And Helpers
	- Textile Industry Machinery Distribution Manager	- Clothing Quality Inspector	- Vehicle, Window, Laundry And Other Hand Cleaning Workers
	- Finishing Textile Technician	- Garment And Related Trades Workers	- Materials Engineer
	- Wholesale Merchant In Textile Industry Machinery	- Sorter Labourer	- Food Processing, Wood Working, Garment And Other Craft And Related Trades Workers
	- Textiles, Textile Semi-finished And Raw Materials Distribution Manager	- Embroiderer	- Product And Garment Designers
	- Import Export Specialist In Textile Industry Machinery	- Dressmaker	- Animal Producers
	- Printing Textile Technician	- Bleaching, Dyeing And Fabric Cleaning Machine Operators	- Craft And Related Trades Workers
	- Screen Making Technician	- Weaver	- Engineering Professionals Not Elsewhere Classified
	- Wholesale Merchant In Textiles And Textile Semi-finished And Raw Materials	- Warehouse Operator For Clothing	- Plant And Machine Operators And Assemblers
	- Textile Dyer	- Clothing Cutter	- Sign Writers, Decorative Painters, Engravers And Etchers
	- Textile, Leather And Footwear Researcher	- Leather Goods Packing Operator	- Cutting Machine Operator
			- Textile, Fur And Leather Products Machine Operators
2. Garment & Apparel	- Wearing Apparel Presser	- Architects, Planners, Surveyors And Designers	- Protective Clothing Apparel Manufacturer
	- Clothing Sample Machinist	- Craft And Related Trades Workers	- Embroidery Machine Operator
	- Clothing Quality Inspector	- Cleaners And Helpers	- Fashion Designer
	- Tailor	- Clothing Alteration Machinist	- Textile Product Developer
	- Clothing Process Control Technician	- Textile, Fur And Leather Products Machine Operators	- Textile, Leather And Footwear Researcher

	- Garment And Related Pattern-makers And Cutters	- Sewing, Embroidery And Related Workers	- Clothing Cad Patternmaker
	- Garment And Related Trades Workers	- Laundry Worker	- Sewing Machine Operator
	- Tailors, Dressmakers, Furriers And Hatters	- Handicraft Workers In Textile, Leather And Related Materials	- Clothing Product Grader
	- Dressmaker	- Hand Launderers And Pressers	- Dressmaker
	- Sewing Machine Operators	- Fashion And Other Models	- Clothing Development Manager
	- Clothing Technologist	- Weaving And Knitting Machine Operators	- Made-up Textile Articles Manufacturer
	- Clothing Cutter	- Laundry Machine Operators	- Clothing Cutter
	- Sewing Machine Operator	- Pelt Dressers, Tanners And Fellmongers	- Clothing Technologist
	- Wearing Apparel Patternmaker	- Handicraft Workers	- Fashion And Other Models
	- Food Processing, Wood Working, Garment And Other Craft And Related Trades Workers	- Wearing Apparel Patternmaker	- Tailor
	- Product And Garment Designers	- Sewing Machinist	- Garment And Related Pattern-makers And Cutters
3. Transport & Logistics	- Intermodal Logistics Manager	- Motorcycle Drivers	- Rolling Stock Inspector
	- Logistics Engineer	- Supply Chain Assistant	- Maritime Instructor
	- Rail Logistics Coordinator	- Exhibition Registrar	- Occupational Driving Instructor
	- Logistics Analyst	- Refuse Vehicle Driver	- Heating Engineer
	- Freight Transport Dispatcher	- Taxi Driver	- Civil Engineer
	- International Forwarding Operations Coordinator	- Hearse Driver	- Delivery Driver
	- Logistics And Distribution Manager	- Forwarding Manager	- Street Vendors (Excluding Food)
	- Funeral Services Director	- Travel Attendants, Conductors And Guides	- Hand And Pedal Vehicle Drivers
	- Supply, Distribution And Related Managers	- Aircraft Maintenance Engineer	- Regulatory Government Associate Professionals
	- Transport Engineer	- Occupational Railway Instructor	- Private Pilot

- Road Transport Division Manager	- Rail Operations Manager	- Sewerage Network Operative
- Maritime Water Transport General Manager	- Bicycle And Related Repairers	- Engine Minder
- Inland Water Transport General Manager	- Construction Scaffolding Supervisor	- Mobile Plant Operators
- Patient Transport Services Driver	- Surface Miner	- Street And Related Sales And Service Workers
- Rental Service Representative In Water Transport Equipment	- Flour Purifier Operator	- Drivers Of Animal-drawn Vehicles And Machinery
- Rental Service Representative In Air Transport Equipment	- Event Assistant	- Building Construction Labourers
- Transport Planner	- Stevedore	- Apiarists And Sericulturists
- Transport Technology Vocational Teacher	- Tram Controller	- Aircraft Cargo Operations Coordinator
- Live Animal Transporter	- Aircraft Pilot	- Locomotive Engine Drivers And Related Workers
- School Bus Attendant	- Phlebotomist	- Hospitality, Retail And Other Services Managers
- Road Transport Maintenance Scheduler	- Private Chauffeur	- Hazardous Waste Technician
- Dangerous Goods Safety Adviser	- Deep-sea Fishery Worker	- Zoo Curator
- Transport Health And Safety Inspector	- Aviation Inspector	- Early Years Teacher
- Conference And Event Planners	- Marketeer	- Zoo Registrar
- Transport Clerks	- Numerical And Material Recording Clerks	- Sewer Construction Worker
- Distribution Manager	- Heavy Truck And Lorry Drivers	- Refuse Collector
- Airline Transport Pilot	- Water And Firewood Collectors	- Shipwright
- Transport And Storage Labourers	- Refuse Sorters	- Car, Taxi And Van Drivers
- Beverages Distribution Manager	- Aviation Safety Officer	- Door To Door Salespersons
- Forestry Machinery Technician	- Performance Production Manager	- Livestock Farm Labourers
- Material-recording And Transport Clerks	- Location Manager	- Power Plant Manager
- Dangerous Goods Driver	- Urban Planner	- Aerodynamics Engineer

- Clothing And Footwear Distribution Manager	- Electrical Transmission System Operator	- Travel Consultants And Clerks
- Chemical Products Distribution Manager	- Nurse Assistant	- Town And Traffic Planners
- China And Glassware Distribution Manager	- Babysitter	- Gas Distribution Engineer
- Tobacco Products Distribution Manager	- Theatre Technician	- Aircraft Pilots And Related Associate Professionals
- Household Goods Distribution Manager	- Mining And Metallurgical Technicians	- Customs And Border Inspectors
- Live Animals Distribution Manager	- Hotel Concierge	- Buyers
- Flowers And Plants Distribution Manager	- Pet Sitter	- Engineering Professionals (Excluding Electrotechnology)
- Waste And Scrap Distribution Manager	- Companion	- Street And Market Salespersons
- Fruit And Vegetables Distribution Manager	- Court Bailiff	- Shotfirers And Blasters
- Perfume And Cosmetics Distribution Manager	- Moving Truck Driver	- Bartenders
- Pharmaceutical Goods Distribution Manager	- Ambulance Workers	- Personal Care Workers In Health Services Not Elsewhere Classified
- Watches And Jewellery Distribution Manager	- Locomotive Engine Drivers	- Hotel Managers
- Pipeline Route Manager	- Railway Sales Agent	- Mixed Crop And Livestock Farm Labourers
- Mover	- Railway Passenger Service Agent	- Garden And Horticultural Labourers
- Helicopter Pilot	- Surveying Technician	- Freight Handlers
- Transport Conductors	- Pipe Welder	- Wood Treaters
- Lifting Truck Operators	- Animal Trainer	- Manufacturing, Mining, Construction, And Distribution Managers
- Specialised Goods Distribution Manager	- Passenger Fare Controller	- Business Services Agents
- Leather Production Manager	- Nanny	- Mixed Crop And Animal Producers
- Metals And Metal Ores Distribution Manager	- Pipeline Engineer	- Animal Producers
- Hides, Skins And Leather Products Distribution Manager	- Surface Mine Plant Operator	- Mining Engineers, Metallurgists And Related Professionals

- Sugar, Chocolate And Sugar Confectionery Distribution Manager	- Underground Miner	- Motor Vehicle Mechanics And Repairers
- Coffee, Tea, Cocoa And Spices Distribution Manager	- Automated Cable Vehicle Controller	- Leather Goods Product Development Manager
- Fish, Crustaceans And Molluscs Distribution Manager	- Coking Furnace Operator	- Wood Processing And Papermaking Plant Operators
- Electronic And Telecommunications Equipment And Parts Distribution Manager	- Hospital Porter	- Civil Engineering Technicians
- Dairy Products And Edible Oils Distribution Manager	- Animal Shelter Worker	- Environmental And Occupational Health Inspectors And Associates
- Furniture, Carpets And Lighting Equipment Distribution Manager	- Escort	- Social Work Associate Professionals
- Agricultural Machinery And Equipment Distribution Manager	- Inventory Coordinator	- Street Vendors (Excluding Food)
- Wood And Construction Materials Distribution Manager	- Energy Analyst	- Animal Producers Not Elsewhere Classified
- Textile Industry Machinery Distribution Manager	- Quarry Manager	- Poultry Producers
- Meat And Meat Products Distribution Manager	- Printmaker	- Tree And Shrub Crop Growers
- Paramedic In Emergency Responses	- Pipeline Superintendent	- Field Crop And Vegetable Growers
- Heavy Truck And Bus Drivers	- Train Driver	- Mixed Crop Growers
- Car, Van And Motorcycle Drivers	- Advertising Installer	- Street Food Salespersons
- Gas Transmission System Operator	- Emergency Ambulance Driver	- Health Care Assistants
- Bus And Tram Drivers	- Horse Trainer	- Mixed Crop And Animal Producers
- Commercial Pilot	- Waste Broker	- Livestock And Dairy Producers
- Transport Equipment Painter	- Pipeline Environmental Project Manager	- Gardeners, Horticultural And Nursery Growers
- Labourers In Mining, Construction, Manufacturing And Transport	- Fire Service Vehicle Operator	- Production And Specialised Services Managers
- Textiles, Textile Semi-finished And Raw	- Elementary Occupations	- Home-based Personal Care Workers

	Materials Distribution Manager		
	- Hardware, Plumbing And Heating Equipment And Supplies Distribution Manager	- Armoured Car Guard	- Food Service Counter Attendants
	- Computers, Computer Peripheral Equipment And Software Distribution Manager	- Mining And Construction Labourers	- Matrose
	- Machinery, Industrial Equipment, Ships And Aircraft Distribution Manager	- Civil Engineering Labourers	- Parliamentary Assistant
	- Mining, Construction And Civil Engineering Machinery Distribution Manager	- Leather Goods Packing Operator	- Wedding Planner
	- Agricultural Raw Materials, Seeds And Animal Feeds Distribution Manager	- Emergency Response Worker	- Shipbroker
	- Motorcycle Delivery Person	- Dog Trainer	- Army Captain
	- Warehouse Manager	- Fire Safety Tester	- Producer
4. Agriculture & Allied Industries	Agriculture, Forestry And Fishery Vocational Teacher	- Rental Service Representative In Agricultural Machinery And Equipment	- Environmental Policy Officer
	- Agricultural Policy Officer	- Wholesale Merchant In Agricultural Machinery And Equipment	- Research Engineer
	- Agricultural Inspector	- Agricultural Raw Materials, Seeds And Animal Feeds Distribution Manager	- Fruit And Vegetable Preserver
	- Agricultural Scientist	- Import Export Manager In Agricultural Machinery And Equipment	- Animal Feed Nutritionist
	- Agricultural Engineer	- Technical Sales Representative In Agricultural Machinery And Equipment	- Skilled Agricultural, Forestry And Fishery Workers
	- Livestock Advisor	- Import Export Specialist In Agricultural Raw Materials, Seeds And Animal Feeds	- Regulatory Government Associate Professionals Not Elsewhere Classified
	- Agricultural Technician	- Farm Manager	- Life Science Professionals
	- Production Managers In Agriculture, Forestry And Fisheries	- Import Export Manager In Agricultural Raw Materials, Seeds And Animal Feeds	- Environmental Engineer
	- Life Science Technicians And Related Associate Professionals	- Irrigation System Installer	- Climatologist

	- Bioengineer	- Land-based Machinery Supervisor	- Surveying Technician
	- Textile Product Developer	- Land-based Machinery Operator	- Market-oriented Skilled Agricultural Workers
	- Agricultural, Forestry And Fishery Labourers	- Land-based Machinery Technician	- Plant And Machine Operators And Assemblers
	- Physical And Earth Science Professionals	- Agricultural And Forestry Production Managers	- Farming, Forestry And Fisheries Advisers
	- Subsistence Crop Farmers	- Machinery Mechanics And Repairers	- Mobile Farm And Forestry Plant Operators
	- Subsistence Fishers, Hunters, Trappers And Gatherers	- Test Engineer	- Blacksmiths, Hammersmiths And Forging Press Workers
	- Subsistence Mixed Crop And Livestock Farmers	- Food And Beverage Tasters And Graders	- Elementary Occupations
	- Biologists, Botanists, Zoologists And Related Professionals	- Agricultural, Forestry And Fishery Labourers	- Mixed Crop And Animal Producers
	- Production And Specialised Services Managers	- Agricultural Technicians	- Mechanical Engineers
	- Subsistence Livestock Farmers	- Agricultural And Industrial Machinery Mechanics And Repairers	- Food Processing, Wood Working, Garment And Other Craft And Related Trades Workers
	- Agricultural Machinery Technician	- Agronomist	- Market-oriented Skilled Forestry, Fishery And Hunting Workers
	- Agricultural Equipment Design Engineer	- Drivers And Mobile Plant Operators	- Field Crop And Vegetable Growers
	- Meteorologists	- Waste Broker	- Mixed Crop Growers
	- Agricultural Machinery And Equipment Distribution Manager	- Production Engineer	- Livestock And Dairy Producers
	- Import Export Specialist In Agricultural Machinery And Equipment	- Automation Engineer	- Subsistence Farmers, Fishers, Hunters And Gatherers
5. Wholesale & Retail	Service And Sales Workers	- Wholesale Merchant In Agricultural Machinery And Equipment	- Press And Stationery Shop Manager
	- Sales Workers	- Wholesale Merchant In Electrical Household Appliances	- Medical Goods Shop Manager
	- Retail And Wholesale Trade Managers	- Wholesale Merchant In Textile Industry Machinery	- Blender Operator
	- Retail And Wholesale Trade Managers	- Wholesale Merchant In Wood And Construction Materials	- Bank Manager

- Retail Entrepreneur	- Wholesale Merchant In Coffee, Tea, Cocoa And Spices	- Fish Preparation Operator
- Shop Sales Assistants	- Wholesale Merchant In Fish, Crustaceans And Molluscs	- Pricing Specialist
- Shop Supervisors	- Wholesale Merchant In Metals And Metal Ores	- Investment Analyst
- Shop Keepers	- Wholesale Merchant In Office Furniture	- Insurance Broker
- Merchandiser	- Wholesale Merchant In Office Machinery And Equipment	- Services Managers Not Elsewhere Classified
- Information And Communications Technology Sales Professionals	- Wholesale Merchant In China And Other Glassware	- Security Guards
- Hospitality, Retail And Other Services Managers	- Wholesale Merchant In Sugar, Chocolate And Sugar Confectionery	- Interior Designers And Decorators
- Shelf Fillers	- Department Store Manager	- Photographic Products Machine Operators
- Wholesale Merchant	- Shop Supervisor	- Pet Groomers And Animal Care Workers
- Shop Salespersons	- Wholesale Merchant In Furniture, Carpets And Lighting Equipment	- Managers
- Retail Department Manager	- Wholesale Merchant In Dairy Products And Edible Oils	- Inventory Coordinator
- Wholesale Merchant In Beverages	- Wholesale Merchant In Machinery, Industrial Equipment, Ships And Aircraft	- Hunters And Trappers
- Fuel Station Manager	- Wholesale Merchant In Electronic And Telecommunications Equipment And Parts	- Pharmacists
- Commercial Sales Representatives	- Wholesale Merchant In Hardware, Plumbing And Heating Equipment And Supplies	- Potters And Related Workers
- Buyers	- Wholesale Merchant In Computers, Computer Peripheral Equipment And Software	- Apiarists And Sericulturists
- Fuel Station Specialised Seller	- Wholesale Merchant In Mining, Construction And Civil Engineering Machinery	- Fishery Workers, Hunters And Trappers

	- Shop Manager	- Wholesale Merchant In Hides, Skins And Leather Products	- Aquaculture Workers
	- Audiology Equipment Shop Manager	- Medical Goods Specialised Seller	- Deep-sea Fishery Workers
	- Wholesale Merchant In Pharmaceutical Goods	- Wholesale Merchant In Agricultural Raw Materials, Seeds And Animal Feeds	- Animal Producers
	- Wholesale Merchant In Waste And Scrap	- Wholesale Merchant In Textiles And Textile Semi-finished And Raw Materials	- Market Gardeners And Crop Growers
	- Wholesale Merchant In Household Goods	- Visual Merchandiser	- Inland And Coastal Waters Fishery Workers
	- Wholesale Merchant In Clothing And Footwear	- Animal Care Attendant	- Market-oriented Skilled Forestry, Fishery And Hunting Workers
	- Wholesale Merchant In Perfume And Cosmetics	- Meat And Meat Products Shop Manager	- Animal Producers Not Elsewhere Classified
	- Wholesale Merchant In Tobacco Products	- Bank Account Manager	- Poultry Producers
	- Wholesale Merchant In Fruit And Vegetables	- Pharmacist	- Tree And Shrub Crop Growers
	- Wholesale Merchant In Machine Tools	- Lottery Cashier	- Field Crop And Vegetable Growers
	- Wholesale Merchant In Flowers And Plants	- Specialised Antique Dealer	- Mixed Crop Growers
	- Wholesale Merchant In Watches And Jewellery	- Real Estate Manager	- Market-oriented Skilled Agricultural Workers
	- Wholesale Merchant In Live Animals	- Press And Stationery Specialised Seller	- Mixed Crop And Animal Producers
	- Wholesale Merchant In Meat And Meat Products	- Shoe And Leather Accessories Shop Manager	- Livestock And Dairy Producers
6. Leather	Leather Goods Artisanal Worker	- Leather Goods Hand Stitcher	- Leather Raw Materials Purchasing Manager
	- Leather Laboratory Technician	- Leather Goods Manual Operator	- Leather Goods Packing Operator
	- Leather Sorter	- Import Export Manager In Hides, Skins And Leather Products	- Leather Goods Warehouse Operator
	- Leather Goods Machine Operator	- Leather Goods Designer	- Leather Wet Processing Department Manager
	- Leather Production Manager	- Import Export Specialist In Hides, Skins And Leather Products	- Leather Production Machine Operator

	- Leather Goods Production Supervisor	- Leather Goods Quality Control Laboratory Technician	- Leather Goods Stitching Machine Operator
	- Leather Measuring Operator	- Wholesale Merchant In Hides, Skins And Leather Products	- Leather Goods Maintenance Technician
	- Leather Production Planner	- Textile, Leather And Footwear Researcher	- Leather Goods Industrial Engineer
	- Finished Leather Warehouse Manager	- Leather Goods Production Manager	- Glove Maker
	- Hides, Skins And Leather Products Distribution Manager	- Leather Goods Product Developer	- Leather Goods Finishing Operator
	- Leather Goods Manufacturing Technician	- Leather Finishing Operator	- Textile, Fur And Leather Products Machine Operators
	- Leather Goods Hand Cutting Operator	- Shoe And Leather Accessories Shop Manager	- Fur And Leather Preparing Machine Operators
	- Leather Goods Cad Patternmaker	- Shoe And Leather Accessories Specialised Seller	- Cutting Machine Operator
	- Leather Goods Patternmaker	- Leather Goods Quality Technician	- Automated Cutting Machine Operator
	- Leather Goods Quality Controller	- Leather Goods Product Development Manager	- Leather Finishing Operations Manager
			- Textile, Fur And Leather Products Machine Operator
7. Pharmaceuticals	- Pharmaceutical Engineer	- Pharmaceutical Technicians And Assistants	- Pet Groomers And Animal Care Workers
	- Pharmaceutical Goods Distribution Manager	- Industrial Pharmacist	- Veterinarians
	- Pharmaceutical Quality Specialist	- Medical And Pharmaceutical Technicians	- Sales, Marketing And Public Relations Professionals
	- Wholesale Merchant In Pharmaceutical Goods	- Fermenter Operator	- Pharmacists
	- Import Export Manager In Pharmaceutical Goods	- Personal Care Workers In Health Services Not Elsewhere Classified	- Biologists, Botanists, Zoologists And Related Professionals
	- Import Export Specialist In Pharmaceutical Goods	- Health Associate Professionals	- Life Science Technicians (Excluding Medical)
	- Granulator Machine Operator	- Medical Sales Representative	- Chemical And Photographic Products Plant And Machine Operators
	- Pharmacy Technician	- Technical And Medical Sales Professionals (Excluding Ict)	- Bioinformatics Scientist
	- Pharmacy Lecturer	- Chemical Products Plant And Machine Operators	- Nuclear Medicine Radiographer

	- Capsule Filling Machine Operator	- Veterinarians	- Medical Imaging And Therapeutic Equipment Technicians
8. Automotive	- Automotive Engineering Drafter	- Vehicle Cleaner	- Restoration Technician
	- Automotive Brake Technician	- Gear Machinist	- Motor Vehicle Parts Assembler
	- Automotive Designer	- Automotive Test Driver	- Roadside Vehicle Technician
	- Automotive Battery Technician	- Vehicle Technician	- Motor Vehicle Mechanics And Repairers
	- Automotive Engineer	- Coachbuilder	- Motor Vehicle Shop Manager
	- Transport Equipment Painter	- Transport Technology Vocational Teacher	- Service Station Attendants
	- Automotive Engineering Technician	- Vehicle Glazier	- Electrical Mechanics And Fitters
	- Automotive Electrician	- Garage Manager	- Refurbishing Technician
			- Vocational Education Teachers

4. Survey Questionnaires

4.1 Questions for Investors (companies/employers)		
1	Full Name of the respondent	
2	Designation of the respondent	
3	Name of the Organization/Company	
4	Phone number (optional)	
5	Email Address	
6	Name of the Economic Zone (EZ) where the company is located/will be located	BSMSN (Bangabandhu Sheikh Mujib Shilpa Nagar) Araihazar EZ (Japanese Economic Zone) AMEZ (Abdul Monem Economic Zone) MIEZ (Meghna Industrial Economic Zone) Bay Economic Zone Kishoreganj Economic Zone (KEZ) Sirajganj Economic Zone Hoshendi Economic Zone
7	How would you describe the current stage of your business? (select the stage that is most applicable to your business)	Submitted the investment proposal to BEZA; waiting for allocation of plot
		Received the allocation of the plot in the EZ; in the planning phase now
		Construction of factory is in progress
		Production in the factory has already started
8	If you are currently in the planning phase, by when do you expect to start your construction?	Not Applicable
		Month & Year
9	If you have not yet commenced operations, by when do you expect to commence your operations (or production)?	Month & Year
10	Which sector or industry does your business fall in? (select the most appropriate option)	Drop down list with a list of sectors/industries <ul style="list-style-type: none"> - Ready Made Garments (RMG) / Apparel - Agri-Business, Food & Meat Processing - Consumer Electronics - Automotive Industry - Leather & Leather Goods - Ship Building - Pharmaceuticals - Steel and steel products - Chemical - Transport and Logistics - Information and Communications Technology (ICT) - Construction - Hospitality - Packaging
		Other ----
11	What is the distribution of your workforce (or projected workforce) w.r.t. skill categories	Professional (white collar): %

		Highly Skilled Workers: %
		Semi-Skilled Workers: %
		Unskilled Workers: : %
12	Based on the distribution of your workforce (question 11) list top five occupations under each skill category.	
13	Currently, from where do you source the skilled and semi-skilled workers critical for your business operations? a) Migrants workers from surrounding localities b) Migrants workers from other parts of the country c) Migrant workers from overseas	a
		b
		a & b
		b & c
		a, b & c
14	While hiring workers, do you have any preference for workers from any specific geographical location? If yes, from which area?	
15	Which are the main sources for hiring new workers and employees?	Public employment service/labor office
		VET schools and/or universities
		Media advertisement
		Internet websites
		Personal visits of job-seekers
		Referred by personal contacts
		Referred by own employees
		Private employment agency
Other		
16	What is your projected workforce (number of new people you plan to hire) requirement in the next 5 years?	Year 1
		Year 2
		Year 3
		Year 4
		Year 5
17	What are the top 5 occupations in your business unit where you foresee the highest shortage of skilled workers in the next 1-5 years (please name in descending order of importance)	1
		2
		3
		4
		5
18	What are the top 3 core behaviours/attitudes that you believe are lacking within your workforce? (please name in descending order of importance)	1
		2
		3
19	List three or more key skills & capabilities required by workers in the digital era?	

	Examples: - Social Media Handling/ Marketing - Web and App Development/ Graphic design - Email/Slack/Microsoft teams and other communication tools - Excel/Word/Microsoft Office	
20	What percentage of your workforce would need to undergo formal skills training?	
21	Do you have the capacity/capability to deliver these skills training programs?	Yes
		No
22	What are the top 10 technical skills that you'll need to train your workers on?	
23	What % of the external training cost your company would like to invest into?	
24	What do you consider as the top 3 critical skills for the future? (eg. automation, robotics, artificial intelligence, data analytics etc)	
25	Have your business operations been impacted by Covid-19?	Not really
		To some extent
		Substantially
		Not Applicable
26	How has your business been impacted by Covid-19? (please select all that apply) a. Reduction in revenue and profitability b. Difficulty in sourcing raw materials c. Difficulty in distribution/export of products d. Difficulty in sourcing and hiring manpower	a
		b
		c
		d
		All of the above
		None of the above
27	Has Covid-19 led to the demand of any new skills?	Yes
		No
	If YES, mention the top 3 skills	1
		2
		3

4.2 Questions for Developers

1	Full Name of the respondent	
2	Designation of the respondent	
3	Name of the Organization/Company	
4	Phone number (<i>optional</i>)	
5	Email Address	
6	What is the total land area of the EZ (in Acres) as per the master plan of the EZ?	
7	What is the maximum number of industrial plots according to the master plan of the EZ?	
8	What is the projection for the available industrial plots over the next 5 years	Year 1
		Year 3
		Year 5
		Comments
9	<p>At what stage of operations is your EZ currently in? (select the most appropriate option)</p> <p>a. Just received EZ license from BEZA, infrastructure development in progress</p> <p>b. Infrastructure development in progress - plot allocation started</p> <p>c. Plot allocation in progress and some business units are already in operation</p> <p>d. Plot allocation completed - full or more than 50% of business units have commenced operations</p>	a
		a & b
		a & c
		a & d
10	What is your projected number of employment in the next 5 years?	Year 1
		Year 2
		Year 3
		Year 4
		Year 5

11	<p>What are the typical sources of livelihood for the local population in this area?</p> <p>(Please mention if there are multiple sources)</p>	
12	<p>What is likely to be the source of the workforce employed by the investors operating in the EZ? (select the most appropriate option)</p> <p>a) Workers from surrounding localities b) Migrant workers from other parts of the country c) Migrant workers from overseas</p>	<p>a</p> <p>b</p> <p>a & b</p> <p>b & c</p> <p>a, b & c</p>
13	<p>What are the top 5 industries that you expect would invest and set up business units in this EZ? (please name in descending order of importance from highest to lowest)</p> <p>1. RMG 2. Steel 3. Chemical 4. Agri-business, Food & Meat Processing 5. Automotive Industry (Assembly) 6. Leather & Leather Goods 7. Ship Building 8. Pharmaceuticals 9. Packaging 10. Logistics 11. ICT 12. Construction 13. Hospitality</p>	<p>1 (drop-down list)</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p> <p>10</p> <p>11</p> <p>12</p> <p>13</p> <p>Other</p>
14	<p>What are the top 5 technical skills that will be easy to find locally? (please name in descending order of importance from highest to lowest)</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>

15	What are the top 10 technical skills that will be challenging to find locally? (please name in descending order of importance from highest to lowest)	1
		2
		3
		4
		5
		6
		7
		8
		9
		10
16	Name 5 Technical and Vocational Training Institutes in the vicinity (within 100 km) that could be good sources for skilled workers for this EZ?	1
		2
		3
		4
		5
17	Is there any seasonal factor that could have short-term impact on labour supply and demand in the locality of the EZ? (climate or seasonal change, natural phenomenon such as flood, festivals etc.)	
18	Have your business operations been impacted by Covid-19?	Not really
		To some extent
		Substantially
		Not Applicable
19	How has your business been impacted by Covid-19? (please select all that apply) a. Reduction in revenue and profitability b. Difficulty in sourcing raw materials c. Difficulty in distribution/export of products d. Difficulty in sourcing and hiring manpower	a
		b
		c
		d
		All of the above
		None of the above
20	Has Covid-19 led to the demand of any new skills?	Yes
		No
	If YES, mention the top 3 skills	1
		2
3		

4.3 Questions for Training Board & Authorities

1	Full Name of the respondent	
2	Designation of the respondent	
3	Name of the Organization/Company	
4	Phone number (optional)	
5	Email Address	
6	Please mention the name of your training board/authority, list the various training and skill development initiatives undertaken directly or indirectly by your organization.	Please mention the name of the initiative/program, focus of the program, geographic location/scope of program and number of intended beneficiaries for each program
7	What is the average total training capacity (annual) and the total number of training centres/institutions that are funded and monitored by your organization?	Please share the number of people trained each year for the last 3 years; number of training centres institutions
8	What is the primary basis of planning of new programs by your organization? (select the most appropriate option)	National policy related to skills development and/or vocational education and training
		Industry skill gap analysis and proposals from industry associations
		Local livelihood and employment assessment
9	How are the training programs financed?	Through national budget
		From private sector contributions
		Funds (grants or loans) from multilateral organizations
		Partly or wholly funded by the learners who enrol in the programs
10	How are the training programs implemented?	Training programs are conducted in centres owned and operated directly by the training board/authority (government owned)
		Training programs are conducted in centres owned and operated by industry
		Training programs are conducted in centres owned and operated by private training providers but funded partly or wholly through government or industry grants
		Training programs are conducted in centres setup in public-private partnership mode jointly by government and the industry/private training providers

11	<p>What are the top 5 industry sectors where you foresee highest skills shortage in the next 3-5 years (please name in descending order of importance)</p> <p>Against each industry sector, please indicate at least 3 occupations that you believe would be in highest demand</p>	1
		2
		3
		4
		5
12	<p>What are the top 3 core skills and behaviours/attitudes that you believe are lacking in the local workers (please name in descending order of importance)</p>	1
		2
		3
13	<p>Do you interact with economic zone investors and employers to understand and analyse their skilling and workforce requirements?</p> <p>If yes, does the analysis incorporate the local downstream supply chains and the requirement of skills therein? Please share an example.</p> <p>Please highlight any studies or skill gap analysis undertaken for any EZs.</p>	Yes
		No
		If yes, name of the report or link to the document
14	<p>Have your training and skill development programs been impacted by Covid-19?</p>	Not really
		To some extent
		Substantially
		Not Applicable

15	<p>What steps are you taking to ensure the continuity of learning for students/workers enrolled in technical and vocational training programs during Covid-19? (please select all that apply)</p> <p>a. Creating/providing training programs that can run entirely online</p> <p>b. Through provision of blended training programs (combination of video demonstrations, on-the-job training and online learning communities)</p> <p>c. Organizing training the trainers and instructors on the distance delivery pedagogy and the use of e-learning tools and resource materials</p> <p>d. Providing adequate resources and support services to students to enable them to learn remotely (eg. access to the internet and devices necessary for e-learning, video and instructional material, access to libraries and electronic databases etc.)</p> <p>You may also describe in the box below any recent initiatives and good practices undertaken in this regard.</p> <p>(space for text)</p>	a
		b
		c
		d
		All of the above
	None of the above	
16	<p>Do you believe that Covid-19 pandemic has led to the demand for new skills? If yes, please mention the top 3 skills. Please name any new training programs that you may have initiated in 2020 in response to the pandemic.</p>	Yes
		No

	Interview Questions For BEZA	Multiple Choice Answers
1	How is skills development and vocational training integrated into the planning of economic zones? (the questions will be open ended with no answer options provided)	<p>Identified as a key parameter in the master plan document for every EZ outlining both hard and soft infrastructure made available for specifically for skills development and vocational training within the EZ</p> <p>Potential investors and business units are asked to include in their proposals details related to how they would invest and implement skills development and vocational training for their employees and contract workers (for eg. periodic upskilling provided to workers)</p>
2	Since easy availability of skilled manpower is a prerequisite for effective operations of business units located in EZs, what steps is BEZA taking to develop skills of youth and adult workers living in the vicinity of the various EZs?	<p>Establishment of dedicated training centres for youth at district level that would focus on training for EZ requirements</p> <p>Organizing camps for (adult) workers for recognition and assessment of their existing skills</p> <p>Sensitizing the local schools and colleges on the job opportunities in the EZs</p> <p>Convening various national and local stakeholders that form a part of the skills ecosystem and encouraging them to integrate technical and vocational education and training in the school and college curriculum</p>
3	Could BEZA play a role in aggregating, analysing and disseminating labour market information for supporting EZs?	<p>For instance, aggregating the demand for skilled/semiskilled workers (from the business units operating in EZs) and the supply of skilled workers (from the various training centres/institutions including but not limited to those set up directly by BEZA) to ensure that EZs can utilize this information for their manpower planning needs</p> <p>Is there an existing mechanism in Bangladesh that could be used/repurposed for use by EZs? What kind of cooperation may be required with other agencies to adapt or set up such a mechanism from scratch?</p>
4	How does BEZA plan to synergize its skills development and vocational training plans/activities with the existing governmental stakeholders in the skills ecosystem (Bangladesh Technical Education Board, National Skills Development Council etc.)?	<p>Is there a formal mechanism in place/envisoned to ensure alignment?</p> <p>It would be important to ensure that standards, curriculum and other enabling elements are not replicated/re-created by BEZA and interventions are targeted at filling the gaps.</p>

5	An overview of the Skill Voucher scheme, the role of BEZA and the other key stakeholders involved in planning and implementation of the scheme	The overall design of the skill voucher scheme – who funds, who trains, direct and indirect beneficiaries, impact evaluation mechanism etc
		The role of various agencies involved in the scheme
6	What is the existing capacity of BEZA to plan and undertake skills development programs for EZs?	Is there a planning document that outlines the vision and mission? Is there a budget for financing skill development activities for the next 3-5 years?
		Is there a dedicated department within BEZA that focuses on skills development activities? Number of dedicated personnel that are assigned and the organogram for the dept (if available); type(s) of technical expertise required and whether it is currently available etc.

5. TVET Sector in Bangladesh Overview

5.1 TVET enrollment in Bangladesh

The table below shows the growth in the number of TVET institutes, teachers and students from 2000 to 2018. The target set by the government is to ensure TVET enrolment of 20% by the year 2020. Latest data needs to be analyzed to see whether this target has been achieved.

Year	Management	No. of Institute	Teachers			Enrolment		
			Total	Female	% of Female	Total	Girls	% of Girls
2000	Public	143	2277	293	12.87	45550	5434	11.93
	Private	994	4542	1103	24.28	70505	22692	32.18
	Total	1137	6819	1396	20.47	116055	28126	24.24
2001	Public	144	2303	299	12.98	48146	5814	12.08
	Private	1272	5258	1295	24.63	83335	26956	32.35
	Total	1416	7561	1594	21.08	131481	32770	24.92
2002	Public	157	2912	368	12.64	42934	5622	13.09
	Private	1405	5711	1362	23.85	91082	28537	31.33
	Total	1562	8623	1730	20.06	134016	34159	25.49
2003	Public	163	2866	345	12.03	46782	5908	12.63
	Private	2154	7461	1545	20.70	141904	40057	28.22
	Total	2317	10327	1890	18.30	188686	45965	24.36
2004	Public	180	2939	372	12.65	47349	6050	12.77
	Private	2412	7864	1274	16.20	132932	26229	19.73
	Total	2592	10803	1646	15.23	180281	32279	17.90
2005	Public	180	2939	346	11.77	48976	6165	12.58
	Private	2548	14246	2877	20.19	192360	56397	29.32
	Total	2728	17185	3223	18.75	241336	62562	25.92
2006	Public	186	3032	374	12.34	50819	6580	12.95
	Private	2987	15769	3082	19.54	217365	63338	29.14
	Total	3173	18801	3456	18.38	268184	69918	26.07
2007	Public	335	4598	593	12.89	122854	14109	11.48
	Private	2809	15154	3224	21.27	237925	74397	31.27
	Total	3144	19752	3817	19.32	360779	88506	24.53
2008	Public	335	4598	593	12.89	122854	14109	11.48
	Private	2781	16105	3585	22.26	330521	92985	28.13
	Total	3116	20703	4178	20.18	453375	107094	23.62
2009	Public	345	4643	608	13.09	124095	14377	11.59
	Private	2945	16880	3901	23.11	351753	98701	28.06
	Total	3290	21523	4509	20.95	475848	113078	23.76

Year	Management	No. of Institute	Teachers			Enrolment		
			Total	Female	% of Female	Total	Girls	% of Girls
2010	Public	251	4424	604	13.65	133897	18659	13.94
	Private	2597	18031	4007	22.22	314030	83922	26.72
	Total	2848	22455	4611	20.53	447927	102581	22.90
2011	Public	251	4448	636	14.30	149620	21448	14.33
	Private	2730	18471	3868	20.94	356936	115405	32.33
	Total	2981	22919	4504	19.65	506556	136853	27.02
2012	Public	245	4862	656	13.49	173424	28279	16.31
	Private	3082	21460	4486	20.90	434752	137195	31.56
	Total	3327	26322	5142	19.53	608176	165474	27.21
2013	Public	248	4942	684	13.84	177329	29045	16.38
	Private	3518	22131	4755	21.49	468656	153617	32.78
	Total	3766	27073	5439	20.09	645985	182662	28.28
2014	Public	248	4945	686	13.87	177527	29058	16.37
	Private	3766	23853	5215	21.86	512136	160116	31.26
	Total	4014	28798	5901	20.49	689663	189174	27.43
2015	Public	252	4957	687	13.86	178085	29674	16.66
	Private	5538	25946	5557	21.42	694573	179200	25.80
	Total	5790	30903	6244	20.21	872658	208874	23.94
2016	Public	288	4973	694	13.96	180592	30041	16.63
	Private	5609	27406	6075	22.17	694678	179615	25.86
	Total	5897	32379	6769	20.91	875270	209656	23.95
2017	Public	288	4999	703	14.06	195534	34796	17.80
	Private	5609	29717	6389	21.50	696430	181580	26.07
	Total	5897	34716	7092	20.43	891964	216376	24.26
2018	Public	866	11423	1940	16.98	329005	67238	20.44
	Private	5999	39508	8272	20.94	738479	197024	26.68
	Total	6865	50931	10212	20.05	1067484	264262	24.76

Image Source ^[1]

1. data.banbeis.gov.bd. Chapter- Seven Technical and Vocational Education. (Accessed on February 2021)
<http://data.banbeis.gov.bd/images/ban007.pdf>

5.2 National Policies and Plans

Bangladesh National Education Policy 2010 envisions a society having quality education and skills to be able to accelerate the national development process, effectively compete with the emerging global technological advancement and eradication of poverty especially through expansion of technical and vocational education.

The National Skills Development Policy (NSDP) 2011 is a significant outcome of the TVET reform project earlier implemented by the government supported by the EU and ILO. The NSDP is a comprehensive policy instrument guiding skills development strategies and is intended to facilitate improved coordination of all parties involved in education and training in Bangladesh. This has provided the rationalization of instituting the National Skills Development Council (NSDC) as an apex body headed by the government (the Prime Minister) responsible for setting the national skills development agenda.

The NSDC is tasked with introducing appropriate policy and set specific mechanisms to improve coordination of skills development across Bangladesh. **The Sixth Five-Year Plan** of the government commits to expansion and modernization of TVET to meet the market demand by improving links between training and job market. The Plan also aims at getting improved quality and relevance of TVET and thereby to increase equity in access to TVET considering market demand, and to enhance employability of the TVET graduates.

The subsequent **Seventh Five Year Plan** has addressed the skills constraints for acceleration of economic growth of the country. Under the NSDP 2011 the **National Technical and Vocational Qualifications Framework (NTVQF)** has been designed to improve the quality and consistency of nationally recognized skills qualifications which has been one of the most important building blocks of the TVET reform project. Another key outcome of the current skills development reform effort is the establishment of the **Industry Skills Councils (ISCs)** for 12 business sectors to help strengthen linkages between industry and the national training system. The existing skill councils include Agro Food Processing, IT, Leather and Leather Products, Transport Equipment, RMG and Textiles, Construction, Furniture, Tourism and Hospitality, Light Engineering, Ceramic, Pharmaceuticals and Jute. The ISC mechanism is aimed to ensure a tripartite approach to continuously improving the skills development system by bringing employers, workers and government representatives together.

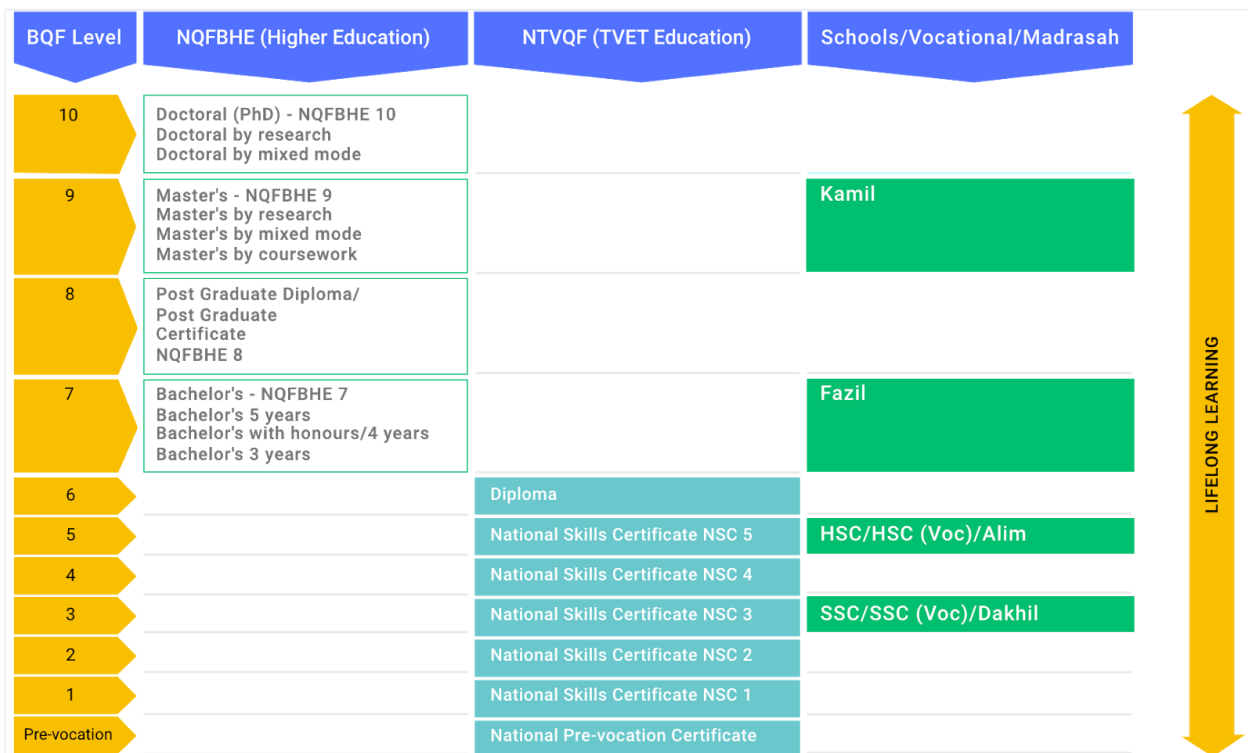
The existing NTVQF has 6 levels (with 2 pre-vocational levels) that equates with a Diploma level of Technical education and can prepare middle level managers but does not include higher level qualifications that merge into higher education.

NTVQF Levels	Education Sectors			Current Qualification Structure	Job Classification
	Pre-Vocation Education	Vocational Education	Technical Education		
NTVQF 6			Diploma in Engineering or equivalent	4 Year Diploma	Middle Level Manager / Sub Assistant Engineer. etc.
NTVQF 5		National Skills Certificate 5 (NSC 5)		NSS Master	Highly Skilled Worker / Supervisor
NTVQF 4		National Skills Certificate 4 (NSC 4)		NSS 1 / HSC (Voc/BM) Year 11 & 12	Skilled Worker

NTVQF 3		National Skills Certificate 3 (NSC 3)		NSS 2 / SSC (Voc) Year 10	Semi-Skilled Worker
NTVQF 2		National Skills Certificate 2 (NSC 2)		NSS 3 / SSC (Voc) Year 9	Medium Skilled Worker
NTVQF 1		National Skills Certificate 1 (NSC 1)		NSS Basic / Basic Trade Course	Basic Skilled Worker
Pre-Voc 2	National Pre-Vocation Certificate NPVC 2			None	Pre-Vocation Trainee
Pre-Voc 1	National Pre-Vocation Certificate 1 NPVC 1			None	Pre-Vocation Trainee

Currently, the National Qualification Framework (NQF) is under preparation and is expected to be in place by the end of 2019. One of the key policy options in relation to NQF is a unified approach that will include all sectors of education and training with one national authority responsible for implementation and quality assurance. The challenge lies in the rolling out of the NTVQF and NQF as early as feasible, and through which, the establishment of a flexible, open, accessible and responsive system for workforce development, and putting in place a strong industry leadership across the whole economy

The new proposed structure of the national qualification framework called the Bangladesh Qualification Framework (BQF) is shown below:



The new framework will enable entry into higher level qualifications and help integrate school, TVET and higher education under a single umbrella.

5.3 Key TVET Initiatives And Projects

Government's commitment and initiatives allowed the development partners to extend their cooperation in reforming and developing the TVET sector in Bangladesh. The development and reform of the sector have been supported over the years by several multilateral and bilateral DPs such as the World Bank, ADB, the UN system of agencies, EU, DfID/UKaid, SDC, the Canadian government, GIZ, KOICA, JICA, Sida and AusAID/DFAT.

In 2006, the government initiated a major reform of the TVET sector in Bangladesh. The TVET Reform project supported by the EU assisted in the development of the National Skills Development Policy, a National Technical Vocational Qualifications Framework, (NTVQF) and strategies to promote social inclusion.^[3]

The government had also set up the National Skills Development Council (NSDC) as the apex body to spearhead and coordinate all efforts in the skills development sector. The National Skills Development Authority (NSDA) Act elevated the NSDC into a full statutory body as an Authority under the Prime Minister's Office. The Government has also introduced the Skills Vision 2016, upgraded the 1968 Bangladesh Technical Education Board (BTEB) Act into the TVET Act 2018.

Some of the important projects include:

Skills and Training Enhancement Project (STEP)

To enhance the access, equity, and quality of the skills development training in the country, the Government of Bangladesh launched Skills and Technical Enhancement Project (STEP) in 2010 funded by the GoB, World Bank, and the Government of Canada with the expected closing date in June 2019. The objective of STEP is to strengthen selected public and private training institutions to improve the training quality and employability of trainees, including those from disadvantaged socio-economic backgrounds.

For this, the project contributes to a stronger and more inclusive private sector training market creating better job opportunities for the poor. The programme tests and scale-up market-driven, quality skills training systems within the readymade garments (RMG) and construction sectors that will stimulate further investment in training by trainees, private training providers and employers. Sudokkho envisages creating strong, inclusive private sector training markets for the RMG and construction sectors. Working with industry partners and private training providers, the programme seeks to facilitate the training of more than 100,000 people from disadvantaged groups, including women and the extreme poor.

Bangladesh Skills for Employment and Productivity (B-SEP) - (2014 – 2018)

The Bangladesh Skills for Employment and Productivity (B-SEP) Project is an initiative of the Government of Bangladesh (GoB) funded by the Government of Canada and executed by the International Labor Organization (ILO) with support from the GoB. The project aims to accelerate the current efforts being undertaken by other organizations, donors and government to make skills in Bangladesh nationally recognized, accessible to all, higher quality and directly linked to jobs.

The B-SEP priority industry sectors are: 1. Agro-food Processing, 2. Tourism, 3. Pharmaceuticals, 4. Furniture Manufacturing, and 5. Ceramics.

The project components are: (i). Institutional Capacity Development (Strengthening of the skills development system, policy implementation and coordination); (ii). Standard Setting, Training,

Assessment and Certification (setting and implementing qualification standards, instructor development and programmes); (iii). Industry Skills Development (Building linkages between demand and the supply of skills in five priority sectors involving the private sector); and (iv). Promoting equitable access to skills by increasing opportunities for training, and provisioning of employment for disadvantaged groups, particularly women and Persons with Disabilities (PWDs) through skills training/apprenticeships and job placement.

Tracer Study of the Trainees under the Industry-led Apprenticeship Project (COEL Industry-led Apprenticeship Project for Leather Industry (2012 – 2014))

The Centre of Excellence for Leather Skill Bangladesh Limited (COEL), founded in 2009 by the Industrial Skills Council in the leather sector, has been assigned to implement the Industry-led Apprenticeship Project by Swiss Agency for Development and Cooperation (SDC). It started as an initiative of the Apex Industries Limited for skills development with support from the TVET Reform Project (funded by EU and implemented by ILO) to assist in the development of competency standards and curricula, training of trainers (ToT) program and development of the apprenticeship model. Today COEL is closely affiliated with the Leather Goods & Footwear Manufacturers & Exporters Association of Bangladesh, and works with different government bodies for instance BTEB, BMET etc. on the development of the country's Technical Vocational Education and Training (TVET) system and the introduction of the National Technical and Vocational Qualification Framework (NTVQF).

5.4 Government Investment in Education and TVET

The total expenditure on education was 1.6 % of total GDP in 1990 which increased to about 2 % in 2000. Since then, it has been hovering around this level (CPD and CAMPE, 2016). Despite growth in the national budget, the share of the education sector in the total outlay has been decreasing over the last few years.

There has been a consistent increase in the TVET budget of the Ministry of Education (MoE), mainly driven by the intention to expand the public network of Polytechnic Institutes and Technical Schools and Colleges. These increases in public funding have, however, not kept pace with the actual level of expansion in the sector, with the shortfall increasingly being met through private sector, informal learning and household spending (source: EU Human Capital Development Programme TOR, 2019)

The Government of Bangladesh finances the majority of the costs of public training institutions and a significant share of teacher salaries at BTEB-approved private secondary vocational institutions. Different numbers have been cited about the proportion of MOE financing devoted to TVET. However, they have one thing in common—all the percentages are low. According to DTE, TVET absorbs 1.7% of the MOE budget. Another source indicates that the government spends a mere 1.3% of its education budget on TVET, and that it decreased from 2.5% in 2004–2005.^[4]

For BTEB-approved SSC (voc) and HSC (voc) institutions, public spending comprised about 2.6% of the total education budget. Only about 1,600 out of 3013 BTEB-approved private TVET providers receive Monthly Payment Orders (MPOs).^[5]

Although BTEB is responsible for regulating private TVET programs, its inspection and monitoring cell is not fully staffed, which affect the frequency of inspection as well as service delivery by private training providers. Students also contribute through tuition and examination fees. However, these fees are minimal and do not provide substantial sources of funding for public institutions. Any cost recovery from students is mostly offset by stipends and scholarships to about two-thirds of all students in public institutions, who are not subject to income criteria or means testing. Rather than contributing financially to the cost of their own training, students receive additional and possibly unnecessary incentives.^[6]

Government grants provide about 70% of public institutions' revenue. In addition, public diploma institutions produce about 20% of their revenue from fees. Private secondary-level institutions received, on average, slightly more than half of their revenue from MPO grants. Private diploma-level institutions are entirely self-financing. Based on a limited institutional survey, the following table shows the composition of funding received, by source, by public and private institutions.

Source	Public		Private	
	SSC/HSC Voc	Post-secondary diploma	SSC/HSC Voc	Post-secondary diploma
Government grants	75.2	69.0	54.6	0.0
Tuition/fees	4.9	20.1	14.5	76.8
Sale of products				
Income from training	3.2	6.0	7.3	0.8
Others	11.8	4.9	14.4	15.9

HSC Voc = higher secondary certificate (vocational), SSC Voc = secondary school certificate (vocational). TVET = technical and vocational education and training.
 Source: World Bank. Institutional survey covering 357 accredited secondary and postsecondary TVET. 2016

Public institutions can use tuition fees to fund short courses, and such fees remain at the institution and increase revenue. Regulations determine the use of the funds, mainly for teachers' salaries and teaching materials/consumables.

TVET institutions spend about 85%–90% of their government subsidies on teacher salaries and allowances.

6. Training Development Planning Recommendations

As outlined in the TNA report, there are a number of commonalities between the different Economic Zones and their respective workforce demands. It can also be seen that the majority of industries expect there to be a relatively even distribution of manpower between unskilled, semi-skilled and highly skilled workers. While initially industries will look to hire candidates with the relevant experience and skills to fill different jobs, over time it will become essential to develop talent at the workplace. The opportunity to build apprenticeship schemes within Economic Zones, develop talent and build a talent pipeline is also highly important. With this in mind we look extensively at the German dual vocational training system and the European Skills Competency and Occupational structure within this report.

6.1 ESCO Classification System

The ESCO is the European classification of Skills, Competences and Occupations. It systematically identifies and classifies professional occupations and skills relevant for the EU labour market. Those concepts and the relationships between them can be understood by electronic systems, which allows different online platforms to use ESCO for services like matching job seekers to jobs on the basis of their skills, suggesting training to people who want to reskill or upskill.^[1]

The TNA links our analysis to the ESCO framework of occupation and skills for one main reason - ESCO provides a clear representation of consolidated (existing) skills and occupations for which mobility of workers is already registered in Europe. This study uses the ESCO framework, embracing a 'common language' on occupations and skills that can be used by different stakeholders on employment and education and training topics.

The ESCO concepts and descriptions help us understand:

- the knowledge and skills required for a specific occupation
- the knowledge, skills and competences obtained as a result of a specific qualification
- the qualifications demanded by employers for a specific occupation.

The study method uses a staged approach to building increasing specificity of labour demand, working from high level Job Families through to specific Job Roles, before comparing demand to supply and signposting training needs.

The TNA also uses the German Qualifications Framework (DQR) for Lifelong Learning. The DQR is an instrument for classifying the qualifications of the German vocational education system. It enables appropriate evaluation and comparability of German qualifications in Europe, making it more transparent and easy to compare the 8 levels of its learning outcomes with the 8 levels of the European Qualifications Framework (EQF). The EQF is used as a translation tool that helps to make national qualifications easier to understand throughout Europe. As a national implementation of the EQF, the DQR accords due consideration to the specific characteristics of the German education system and assists to make equivalences and differences between qualifications more transparent and to use this as a vehicle for supporting permeability and mobility.

6.2 The German Qualifications Framework (DQR)

The DQR differentiates between eight levels for the general description of competences which can be acquired in the German education system.

DQR Levels	Education Level	Current Qualification Structure	Prerequisites
1	Vocational training preparation 1 year (Full-time school education)	National Certificate	
2	Entry-level vocational training 2 year (Full-time school education)	National Certificate	
3	Occupations requiring training 2 year	National Apprenticeship Diploma	
4	Occupations requiring training 3-3.5 years	National Apprenticeship Diploma	
5	IT Specialist (certified), service technician (Certified)	National (certified) certificate	Holder of a National Apprenticeship Diploma (level 4)
6	Master professional, bachelor professional, certified specialist, equivalent to bachelor's degree	Bachelor Technician Diploma	Holder of a National Apprenticeship Diploma (level 4) or high school diploma (min. 11 years)
7	Strategic professional (IT), equivalent to masters degree	Master	Bachelor or Technician Diploma (Level 6)
8	Doctorate	PhD	Master (Level 6/7)

To further align our study and bring coherence to this sector, the TNA maps the analysis to the National Technical And Vocational Qualifications Framework (NTVQF) of Bangladesh. NTVQF provides clear exit points at each of the levels for learners to enter the workforce from full-time and part-time studies. Existing workers will benefit by being able to seek a qualification under the framework through training and/or by recognition of prior learning. The framework supports flexible delivery of training programs whereby individuals can stop and start their programs as circumstances require.

6.3 The NTVQF pathways flowchart shows the exit/entry points.^[2]

NTVQF Levels	Education Sectors			Current Qualification Structure	Job Classification
	Pre-Vocational Education	Vocational Education	Technical Education		
NTVQF 6			Diploma in Engineering or equivalent	4 Year Diploma	Middle Level Manager / Sub Assistant Engineer. etc.
NTVQF 5		National Skills Certificate 5 (NSC 5)		NSS Master	Highly Skilled Worker / Supervisor
NTVQF 4		National Skills Certificate 4 (NSC 4)		NSS 1 / HSC (Voc/BM) Year 11 & 12	Skilled Worker
NTVQF 3		National Skills Certificate 3 (NSC 3)		NSS 2 / SSC (Voc) Year 10	Semi-Skilled Worker
NTVQF 2		National Skills Certificate 2 (NSC 2)		NSS 3 / SSC (Voc) Year 9	Medium Skilled Worker
NTVQF 1		National Skills Certificate 1 (NSC 1)		NSS Basic / Basic Trade Course	Basic Skilled Worker
Pre-Voc 2	National Pre-Vocation Certificate NPVC 2			None	Pre-Vocation Trainee
Pre-Voc 1	National Pre-Vocation Certificate 1 NPVC 1			None	Pre-Vocation Trainee

The following Case study provides an excellent example of how industrial partners in Saudi Arabia developed a 4 year vocational training program to develop technical talent for the Oil & Gas sector. There are many similarities between this project and the Economic Zones at the center of this report. The opportunity to develop collaborative vocational training and apprenticeship schemes at an Economic Zone level can prove extremely useful in the longer term, as it ensures the employability and industry readiness of employees. It also ensures that workers can add value to a company while continuing to learn.

While the Dual Vocational model needs extensive planning to be successful, the Economic zone structure, their interest to attract top talent and be globally competitive makes this an ideal system.

6.4 Case Study – Vocational Training in Saudi Arabia

Technical and vocational education and training (TVET) plays a critical role in developing essential labor market skills. In Saudi Arabia, participation in TVET has traditionally been stigmatized in favor of white-collar jobs. However, the importance of skilled labor has increased in Saudi Arabia's private sector as the country's Vision 2030 focuses on moving the economy from oil to investment. This quantitative study investigates the role of recent socio-economic transformations in changing attitudes toward TVET.

Statistical analysis of a questionnaire distributed to 1007 TVET students identified a significant relationship between perceptions of TVET and gender, family income, and parental educational level.

The vocational training system in Saudi Arabia is undergoing a comprehensive modernization process as the country is in need for a better qualified workforce. In light of this increased need, the government and industries have initiated many different projects and public-private initiatives. The National Industrial Training Institute (NITI), a joint venture between Saudi Aramco and the Technical Vocational Training Corporation (TVTC) is one of these initiatives.

TÜV Rheinland, a leading global Training and certification leader, has been selected as the Operator of the capacity building / technical training programs to qualify young Saudi High School graduates for a profession in the oil and gas industry.

TÜV Rheinland is responsible for the operational implementation of the training programs. These include a wide range of vocational training programs, all running for a period of 3-12 months. In perspective NITI will have a capacity of up to 2,500 participants annually.

In addition, TÜV Rheinland expands existing curricula, guides on the modernization of workshops and develops an industry-specific seminar program.

A four stage approach to job readiness

1. Academic training

In the first stage, students get a first introduction into vocational education. The focus is more on academic education - technical mathematics, technical English and science. This is an important stage to bring all school leavers to a common level. The programs have a length of about 12 months.

2. Vocational training (in the training center)

In this phase the trainees gain their first contact with their future professions. The program takes place in a training center and the apprentices start with basic knowledge but are not yet ready to do the job. The training professions have a wide range, from metal professions, to electricians, to refinery operators.

Duration: 12 to 15 Month

1 + 2 = No job readiness

3. On job training

In this phase, the apprentices will return to the company and apply the basic knowledge they have learned at the training center. Here it is more about deepening topics, building up skills to work independently and to cope with challenges of daily working life.

Duration: 12 to 15 Month

4. Special training

In this phase (which not all trainees go through), trainees are prepared and trained in a specific area. Special skills are trained which are not learned during the 3 previous phases and neither are they equal to the general training.

As an example: The apprenticeship profession is welder: In phases 1+2 general theoretical knowledge is provided, in phase 3 general part skills are trained and in phase 4 the apprentice could be specially trained as a pipe welder, for example.

The education or training again takes place in a training center. However, this is oriented towards the specialized training of the company.

Duration: Between 3-6 months

(1+2)+(3+4) = Job readiness

The greatest challenge is between phases 2 and 3. Since the trainees acquire mainly theoretical knowledge in phase 2 and it is difficult for them to learn it practically in phase 3. In fact, the aptitude and ability to learn them is lacking. For this reason, the TVTC has decided (as described above) to restructure phase 2 of the training system and focus more practice-oriented training and adapt some similar system of the German dual training system. With the following goals:

Primary objective:

1. Implementation of the vocational training model "German dual vocational training".
2. Modernization of existing curricula abroad
3. Training of local teaching staff
4. Definition of new occupational profiles according to German standards abroad

Secondary objective:

1. Expanding educational opportunities and thus limiting youth unemployment in the target countries.
2. Long-term improvement of the educational situation and thus higher economic productivity in the target countries
3. International career prospects and opportunities for graduates

6.5 Didactical and Methodical Fundamentals

1. Preparation and planning phase

- a. Market analysis with regard to existing educational models as well as industrial needs
- b. Establishment of networks and acquisition of partners in industry and business in order to promote the German vocational training model and the dual character of training
- c. Review of existing training professions, models, etc. and, if necessary, definition of new occupational profiles
- d. Evaluation of existing curricula, as well as modernization approaches of these
- e. Human resource management
Training and further education of teaching staff
Potential participants (trainees)
- f. Evaluations of the potential educational institution
Overall condition of the teaching facility

Comparison of the existing equipment with the teaching content

Training facility certification by TÜV Rheinland

2. Realization phase

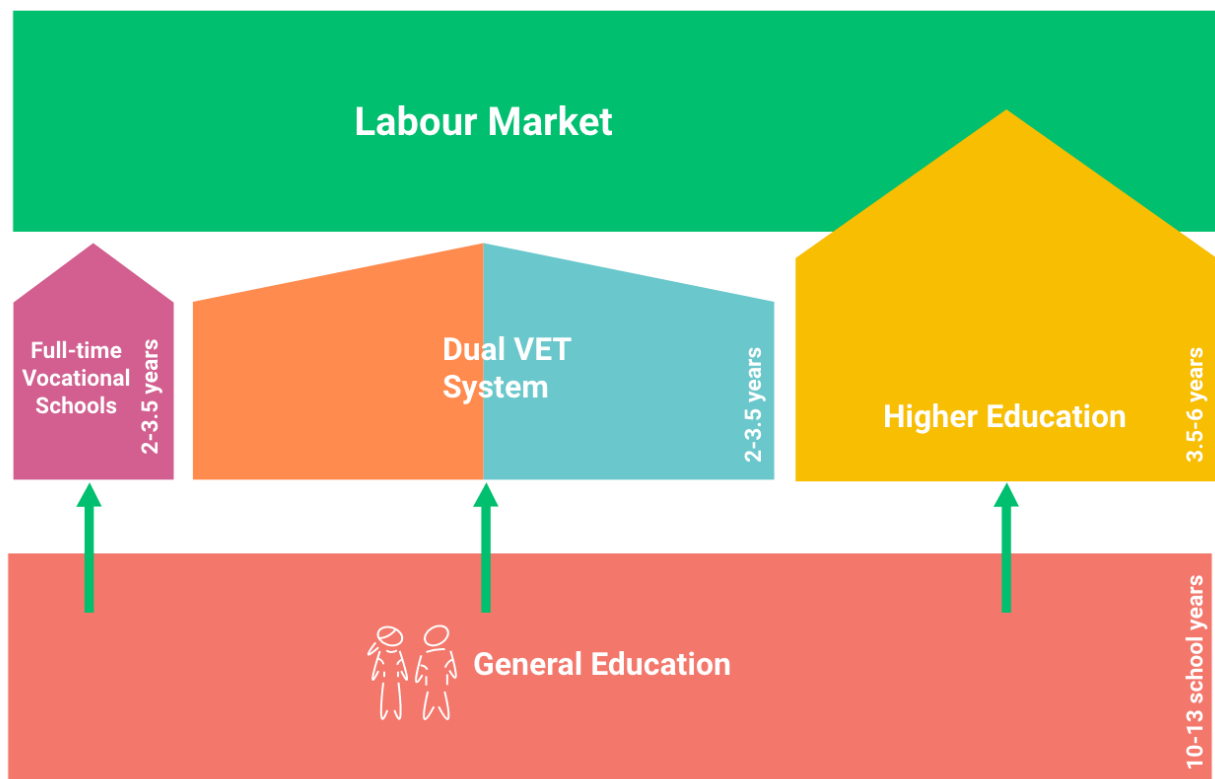
- a. Systematic incorporation of new teaching content into existing curricula, if necessary reorganization of the curriculum structure
- b. Determination of the examination structure according to German vocational training including adaptation of the local legal conditions
- c. Uniform training and certification of teaching staff
- d. Possible pilot phase with subsequent evaluation

3. Qualification and final phase

- a. Final examination as well as competence assessment of the graduates
- b. Alignment of the defined targets and, if necessary, creation of a rework concept
- c. Managing the experience of the graduates as well as the entire organization

6.6 Germany's Dual System of Vocational Training

The dual system of vocational training in Germany. The Federal Ministry for Economic Affairs and Energy wants to provide information, insights and ideas on the dual system of vocational training in order to help interested countries to develop national solutions. It should particularly be noted that the success of the dual system in Germany – and in countries like Switzerland, Austria and Denmark – is linked to the historic roots of the scheme. The support of the relevant stakeholders for the “National Pact to Promote Training and Young Skilled Workers” reflects this broad social acceptance.



1. Practice-relevant and theory-based training

The core concept of the dual system of vocational training, is training that takes place both at a company and at a vocational school in tandem. The company provides trainees with the practical part of the training for 3–4 days a week, while the vocational school delivers the theoretical part for the other 1–2 days. Specialists from the companies play the greatest part in the trainees’ process of “learning on the job”. They are heavily involved in the design of training regulations – defining the technical content of the training

course at the company and setting examination requirements. This plays a major part in ensuring that these regulations are accepted by the companies.

2. Standardised course content and examinations across Germany

The training at the company is governed by training regulations that set out uniform, nation-wide standards for training content, the training timetable, and examinations. The nation-wide standards and the nationally recognized qualifications act as a quality benchmark for employers and serve as a basis for recruitment. This helps employees to find a new job more quickly.

The broad applicability of the training ensures that employees trained within the dual system remain mobile. This is a major factor for the high level of acceptance of the system within the business community.

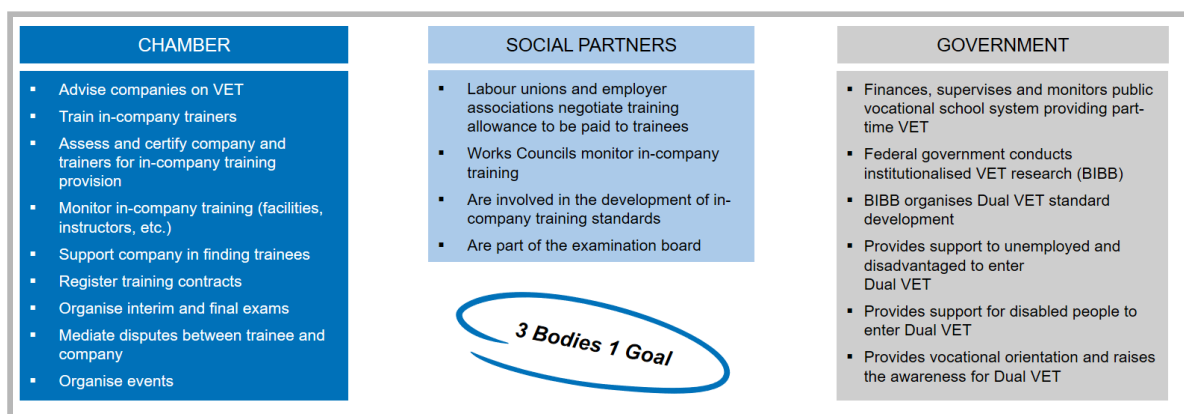
3. Continuous updating of the training in response to technical advances and changing business practices

The vocational training regulations are revised in accordance with technical progress, developments in professional practice and economic and social change. This involves modernizing current regulations or creating new ones to meet the needs of business. The availability of employees who have been trained in line with the latest technical developments has a positive impact on companies' innovation and therefore on their competitiveness. There are vocational training qualifications for all areas of business and administration; depending on the breadth and depth of the course content, training lasts for between two years and three and a half years.

4. Collaboration between employers and trade unions

When the content of a training course needs to be brought in line with changes in professional practice or technical progress, or if a new occupation is created, the initiative is normally taken by organizations linked to the employers. Once all the parties involved – especially the trade unions – have been heard, the relevant minister (normally the Federal Minister for Economic Affairs and Energy) meets together with the “federal states”, which are responsible for the vocational schools, to decide whether or not the initiative should be implemented.

If the decision is positive, the training qualification is modernized, or a new qualification created. This takes place in collaboration with the experts from the employers' side and the trade unions. This procedure ensures that developments in vocational qualifications meet the needs of business.



5. Coordination of practical and educational components of the curriculum

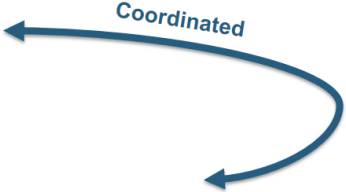
The experts who compile the content of the practical training work together with those responsible for the curricula at the vocational schools. Whenever a new qualification is modernized or created, the curriculum taught at the vocational schools is revised accordingly. The theoretical foundations are developed by the

vocational school on the basis of the content of the practical training. In this way, practical and educational training are designed to dovetail.

Local companies work with the vocational school responsible for their trainees in order to produce the best possible programs of training for the companies and the region. This is a key aspect of quality assurance.

- **In-company training standard ("training regulations") includes**
 - ✓ Set of competencies of occupation to be trained (occupational profile/standard)
 - ✓ How a company must teach this occupation, as minimum requirements (training standard)
 - ✓ What a trainee needs to know in order to pass the exam (examination standard)

- **Vocational education standard ("framework curriculum")**
 - ✓ Learning objectives and content (structured in "learning fields") which form the basis for the schooling in vocational subjects in the vocational school
 - ✓ Vocational subjects provide the vocational theory needed for working in a given occupation



6. "Inter-company" training to supplement the instruction provided at specialised companies

Some companies are too specialized to be able to deliver all of the training content stipulated in the training regulations. In such cases, the trainees can receive extra training at chambers of crafts to cover the rest of the course content. By supplementing the practical training given at the company, this service enables more companies to offer vocational training and boosts the number of vocational training places. This system of "inter-company" training receives considerable funding from the Federal Economics Ministry

7. Training the instructors

In order to train young people properly, the people doing the teaching must fulfil statutory requirements relating to both specialist knowledge and personal aptitude. This not only includes professional skills but also the necessary teaching skills, which must be verified by means of an independent test. These requirements not only guarantee that the content of the training course is taught correctly, but also that the planning and conducting of the training courses is in line with legal requirements and the needs of the trainees in terms of both methodology and teaching.

8. Ensuring the ability of companies to provide training through professional associations

The self-regulatory bodies (the chambers) advise the companies providing training, monitor the training, determine the suitability of companies and instructors, register training contracts and conduct nationwide examinations. This serves to ensure a high level of quality.

9. Total costs of vocational training

The total operational cost of an entire apprenticeship period (3 – 3.5 years) approx. 63.000 € per trainee.

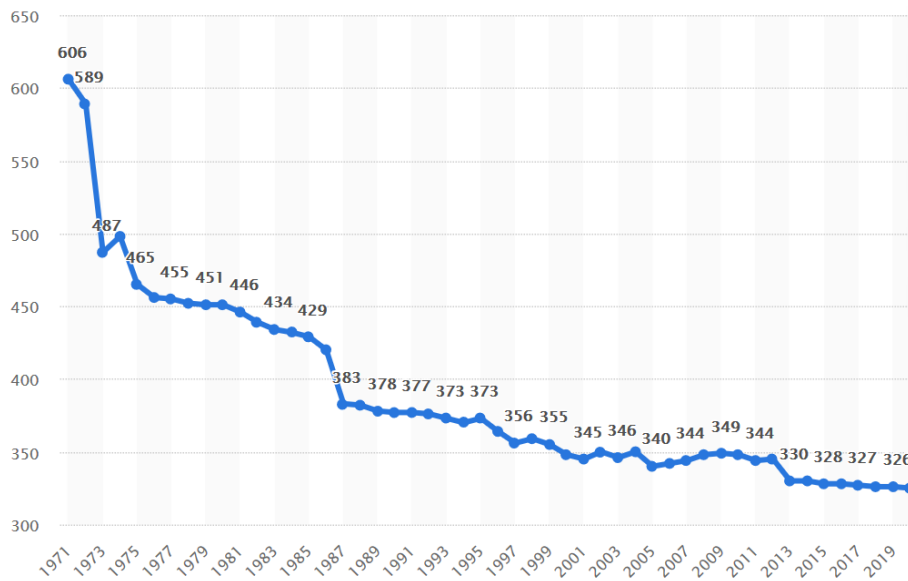


7. Skill Development Strategy

In order to take a closer look at opportunities to develop a skill development strategy, the report takes into consideration examples from well established structures, with a focus on Germany and the European Union. Following the assessment of the vocational training system in Bangladesh, this report identifies the key indicators and the core skills, which are required to meet the needs of specific industries. Furthermore, the current status of the industry is presented and compared to an international benchmark (German Qualification Framework). Based on this, it describes the approach and steps which are required in order to achieve a national and international standard.

The German Qualification Framework (DQF)

In response to changing industry demand, and the need to ensure that qualifications are flexible and cross-functional, the DQF has significantly decreased the number of recognized vocational qualifications over the past 50 years. Today there are 326 approved qualifications.



Source: Federal Ministry of Education and Research Germany (2019)

Over this period, it has been observed that the market is overcrowded with an oversupply of professions, which causes a decrease in the demand for certain trades and industries. In order to avoid this, over time, occupational professions have been grouped together and assigned to a specific industry. This has several advantages;

- The industry could be strengthened, since the focus belongs completely to key competences
- A sustainable number of qualified specialists can be developed
- After graduating from vocational training, trainees have the opportunity to be active in several occupational fields
- Higher education levels can be achieved (DQF level 6 onwards)

7.1 Example: Apprenticeship occupation - Mechatronics technician

Modern-day mechatronics mechanic, as an apprenticeship profession, was established in 2003 for the first time. In the process of the industrial revolution, it was noticed that an industrial mechanic needs more skills than "only metals" and similarly, an industrial electrician does not only need electrical skills. Consequently,

the two professions were combined and the mechatronics technician was developed. It is important to understand that the fundamental skills of all three professions are the same, while the key skills are different. Therefore, all three professions are equal with respect to the value of the job but have more possibilities to develop and specialize. As a result, the industrial mechanic focuses on the metal industry, the industrial electrician on the electrical industry and the mechatronics engineer can take on future-relevant topics such as Industry 4.0, an area where all three occupational profiles are required.

In order to examine the topic further, the following German use case provides an in-depth description of how to build up core competencies and industrial skills as an industrial mechanic and mechatronics mechanic. Both roles that are relevant to the EZ's of this study, both in terms of technical, but also core skills and competencies.

7.2 Use case: Building up core competences and industrial skills (industrial mechanics and mechatronics mechanics)

The framework curriculum for assigned occupations is divided into basic training, covering a wide range of occupational fields, and specialized training.

Educational role of the vocational school

The vocational schools and the training companies fulfill a joint educational mission in dual vocational training.

The vocational school is an independent place of learning. It works as an equal partner with the other parties involved in vocational training. It has the task of imparting vocational and general learning contents to the students with special consideration of the requirements of vocational training.

The vocational school aims to provide basic and specialized vocational education and to extend the general education previously acquired. In this way, it aims to enable students to fulfill their tasks in the workplace and to help shape the world of work and society in terms of social and ecological responsibility.

The vocational school aims to:

- impart vocational skills that combine technical competence with general skills of a human and social nature;
- to develop vocational flexibility to cope with the changing demands in the world of work and society, also in view of the growing together of Europe:
- to prepare for further and continuing vocational training;
- to ensure the ability and willingness to act responsibly in shaping individual lives and in public life.

In addition, the vocational school should, in general instruction and as far as possible in the context of job-related instruction, focus on core problems of our time, such as:

- Work and unemployment,
- Peaceful coexistence of people, nations and cultures in a world that preserves cultural identity,
- preservation of the natural basis of life, and
- guarantee of human rights

The goals listed are aimed at the development of action competence. This is understood here as the willingness and ability of the individual to behave appropriately, thoughtfully and in an individually and socially responsible manner in social, professional and private situations.

Competence to act, develops in the dimensions of professional competence, human competence (personal competence) and social competence.

Professional competence refers to the willingness and ability to solve tasks and problems in a goal-oriented, appropriate, methodical and independent manner on the basis of professional knowledge and skills and to evaluate the results.

Personal Competence refers to the willingness and ability as an individual personality to clarify, think through and assess development opportunities, requirements and restrictions in family, work and public life, to develop one's own talents and to make and develop life plans. It includes personal qualities such as independence, critical faculties, self-confidence, reliability, sense of responsibility and duty. It also includes, in particular, the development of well thought-out values and self-determined commitment to values.

Social competence, describes the willingness and ability to live and shape social relationships. The ability to grasp and understand attitudes and tensions, as well as to deal with and communicate with others rationally and responsibly. This includes in particular the development of social responsibility and solidarity.

Methodical competence, grows out of a balanced development of these three dimensions.

7.3 Didactic Principles

The objective of vocational training requires that teaching be based on a pedagogy tailored to the tasks of the vocational school, which emphasizes action orientation and enables young people to independently plan, carry out and assess work tasks within the framework of their occupation.

Learning in the vocational school basically takes place in relation to concrete, professional action as well as in various mental operations, including mental comprehension of the actions of others. This learning is primarily linked to the reflection of the execution of the action (the plan of action, the process, the results). With this mental penetration of vocational work, the prerequisites are created for learning in and from work. This means for the framework curriculum that the description of the goals and the selection of the contents are job-related.

On the basis of learning theoretical and didactic findings, the following points of orientation are named in a pragmatic approach for the design of action-oriented instruction:

- Didactic reference points are situations that are significant for professional practice (learning for action).
- The starting point for learning is action, if possible carried out by the students themselves or mentally comprehended (learning by doing).
- Actions must be planned, carried out, checked, corrected if necessary and finally evaluated by the learners as independently as possible.
- Actions should require a holistic grasp of professional reality, e.g. include technical, safety, economic, legal, ecological, social aspects.
- Actions must be integrated into the experiences of the learners and reflected in terms of their social impact.
- Actions should also include social processes, e.g. the declaration of interests or conflict resolution.

Action-oriented teaching is a didactic concept that interweaves subject and action system structures. It can be realized by different teaching methods.

The teaching offered by the vocational school is aimed at young people and adults who differ according to their previous education, cultural background and experience in the training companies. Vocational schools can only fulfill their educational mission if they take these differences into account and support students - including disadvantaged or particularly gifted students - according to their individual potential.

7.4 Core competences and industrial skills defined in learning fields

The objectives and content of the learning Fields in the framework curriculum are to be implemented in such a way that they lead to professional competence. With a view to technical change, the content of the framework curriculum is formulated in a function-related manner. They are to be updated in line with technical change.

In implementing the framework curriculum, methods are to be used which promote manual competence. Mathematical, scientific and foreign language content as well as aspects of economics, ecology and occupational health and safety are to be communicated in an integrative manner.

Mechatronics Mechanics

1. Cooperate with other people in the course of their professional activities and communicate with them in English. They also work in an interdisciplinary manner and use current information and communication tools, including in a virtual environment;
2. Apply technical rules and regulations when working in mechatronic systems. They also use audiovisual and virtual aids;
3. Take into account the data and information security associated with the digitalization of work;
4. Carry out basic calculations taking into account technical and business variables. They use tables and formulas for this purpose;
5. Take ergonomic, economic, ecological and social aspects into account when organizing and performing work;
6. Minimize negative effects of the work process on the environment by using suitable materials, acting responsibly and observing environmental protection regulations;
7. Ensure the trouble-free operation of equipment and systems by complying with maintenance instructions. Their quality awareness enables them to comply with quality standards and identify cost-effective solutions;
8. Describe the mode of operation, production and organizational processes as well as the integration of cyber-physical systems, also taking into account logistical process steps;
9. Plan and configure networks, taking into account current standards;
10. Program and configure systems as well as intelligent sensors and actuators in compliance with standards;
11. Install and expand mechatronic systems, set them up and network them using suitable interfaces and protocols;
12. Use programs and systems to collect, process and analyze process-related data and information;
13. Develop well-founded procedures for troubleshooting and fault elimination and derive conclusions for fault elimination and process optimization from fault diagnoses and process-related data;
14. Use various software for process planning, control and analysis;
15. Take into account the information technology protection goals of availability, integrity, confidentiality and authenticity;
16. Analyze descriptions, operating instructions and other information typical of the profession in German and English and prepare them in a way that customers can understand.

Learning Fields

Summary of the learning fields for the training occupation of Mechatronics Mechanics					
Learning fields		Suggested time allocation in hours			
		1st Year of Training	2nd Year of Training	3rd Year of Training	4th Year of Training
No.					
1	Analyze functional correlations in mechatronics systems	X			
2	Produce mechanical sub-systems	X			
3	Install electrical equipment according due consideration to technical safety aspects	X			
4	Investigate the energy and information flows in electrical, pneumatic and hydraulic subassemblies	X			
5	Communicate with the assistance of data processing systems	X			
6	Plan and organize work processes		X		
7	Realize simple mechatronics components		X		
8	Design and develop mechatronics systems		X		
9	Investigate the information flow in complex mechatronics systems				X
10	Plan assembly and disassembly				X
11	Commissioning, trouble shooting and repair				X
12	Preventative maintenance				X
13	Hand over mechatronics systems to customer				X

Industrial Mechanics

1. Work and communicate within and outside the company as well as interdisciplinary with other people, also from other cultural backgrounds, within the scope of their professional activities. They work in a team-oriented manner and use current means of communication, also in virtual space;
2. Apply technical rules and regulations as well as audiovisual and virtual aids to obtain information and when working in technical systems;
3. Plan and organize work processes, check and evaluate work results, also using digital tools. They use information technology systems for order planning, order processing and deadline tracking;
4. Take into account the data and information security associated with the digitization of work;
5. Research and evaluate information sources and information, also in digital networks;
6. Test mechanical and physical quantities, also with the help of current applications;
7. Manufacture components using manual and machine manufacturing processes;
8. Create and optimize programs and operate numerically controlled machines, devices or systems;
9. Work in networked manufacturing systems;
10. Assemble and disassemble machines, equipment, fixtures, and systems;
11. Commission systems and equipment, including control and regulating equipment, and instruct customers;
12. Carry out maintenance work, also using digital diagnostic tools, and ensure the operational capability of technical systems;

13. Describe the mode of operation, production and organizational processes as well as the integration of cyber-physical systems, also taking into account logistical process steps;
14. Create technical documentation, also using digital media;
15. Apply standards and guidelines to ensure process and product quality and contribute to the continuous improvement of work processes in the company;
16. Apply current methods of quality assurance.

Learning Fields

Summary of the learning fields for the training occupation of Industrial mechanics					
Learning fields		Suggested time allocation in hours			
		1 st Year of Training	2 nd Year of Training	3 rd Year of Training	4 th Year of Training
No.					
1	Manufacturing components with hand tools	X			
2	Manufacturing of components with machines	X			
3	Manufacture of simple assemblies	X			
4	Maintenance of technical systems	X			
5	Production of individual parts with tool machine		X		
6	Installation and commissioning of control systems		X		
7	Assembly of technical subsystems		X		
8	Manufacturing on numerically controlled machine tools		X		
9	Repair of technical systems		X		
10	Manufacture and commissioning of technical systems			X	
11	Monitoring product and process quality			X	
12	Maintenance of technical systems			X	
13	Ensuring the operability of automated systems			X	
14	Planning and implementing technical systems				X
15	Optimization of technical systems				X

7.5 Achievements & legal requirements (Example: Industrial Mechanics)

The following provides an overview of the harmonized structure of awarding and recognition of vocational occupations.

1. Title of the certificate

Abschlussprüfung im staatlich anerkannten Ausbildungsberuf Industriemechaniker/Industriemechanikerin

2. Translated title of the certificate

Final examination in the state-recognized training occupation industrial mechanic

3. Profile of skills and competences

1. Organise and check production and manufacturing processes
2. Make structural components and subassemblies and assemble them to produce technical systems
3. Identify and document faults and their causes in technical systems
4. Repair technical systems
5. Retrofit machines and systems
6. Complete maintenance work and inspections
7. Select testing procedures and testing equipment
8. Deliver technical systems and products to customers and provide instructions in the use of the plant
9. Ensure the functionality of technical systems
10. Monitor and extend electrical control components
11. Consider business processes and apply quality management
12. Act autonomously in completion of activities taking into account relevant regulations and safety provisions
13. Coordinate work with upstream and downstream departments
14. Set up workstations
15. Communicate with internal and external customers in a manner appropriate for the situation; work as part of a team
16. Check and document maintenance and assembly work with due regard to company quality management systems.
17. Use IT systems, including in digitised processes, Apply regulations relating to data protection and information security.

4. Range of occupations accessible to the holder of the certificate

Industrial mechanics are employed in the manufacture, maintenance and monitoring of technical systems. They work in the setting up, retrofitting and commissioning of production plants. Typical areas of deployment are maintenance, machine and plant construction, production technology and the construction of precision devices.

5. Official basis of the certificate

<p>Name and status of the body awarding the certificate</p> <p>Chamber of Industry and Commerce</p>	<p>Name and status of the national/regional authority providing accreditation/recognition of the certificate</p> <p>Chamber of Industry and Commerce</p>
<p>Level of the certificate (national or international)</p> <p>ISCED 354 This qualification corresponds to Level 4 of the German and European Qualifications Framework; cf. publication from 1 August 2013 (BAnz AT 20/11/2013 B2)</p>	<p>Grading scale / Pass requirements</p> <p>100-92 points = 1 = excellent 91 - 81 points = 2 = good 80 - 67 points = 3 = average 66 - 50 points = 4 = pass 49 - 30 points = 5 = poor 29 - 0 points = 6 = fail</p> <p>A total of at least 50 grade points are required to pass the examination.</p>
<p>Access to next level of education / training</p> <ul style="list-style-type: none"> • Certified industrial master craftsman specialising in metalworking • Certified industrial master craftsman specialising in mechatronics • State-certified technician in the relevant specialisms. Certified process manager – production technology 	<p>International agreements</p> <p>In the field of vocational training, joint declarations on the comparability of qualifications obtained in the respective vocational training systems have been signed on the basis of bilateral agreements concluded between Germany and France and between Germany and Austria.</p>

6. Officially recognised ways of acquiring the certificate

Final examination administered by the competent body:

- after completion of dual training in a company and at part-time vocational school (normal procedure)
- after retraining in a recognized training occupation
- as an external examination for working people without formal vocational qualifications or persons who have been trained at full-time vocational schools or other vocational training institutions

Additional information:

Entry requirements: Entry requirements are not governed by legislation; as a rule, young people are admitted after completing (nine or ten years of) general education.

Duration of training: 3, 5 years.

Training in the "dual system":

Teaching of the knowledge, skills and competences needed for an occupation is based on the typical requirements of work and business processes and prepares the trainees for a specific job. The training is provided in a company and at part-time vocational school: In the company, the trainees acquire practical skills in a real working environment. On one or two days per week, the trainees attend part-time vocational school, where they are taught general and vocational knowledge related to their training occupation.

8. Insights Into Developing Of A Strong Supply Of Training And Skilled Labour

8.1 Skills Anticipation framework

Labour markets are transformed by many changes including technology, climate change and demography. Individuals would benefit greatly from knowing what type of education and training to follow; enterprises would know the skills they need; and policy-makers could adapt education and training systems to new skill needs.

Labour Market and Skills Intelligence (LMSI), provides information on current and future labour market trends and skill needs can help people, enterprises and policy-makers make informed decisions. Relevant Labour Market Information (LMI) on current and future skill needs also supports individual decisions and career counselling and vocational guidance services.

Skills anticipation and matching is the process of producing and building on available LMSI to achieve a better balance between skill supply and demand, to promote economic development through targeted skills investments by individuals, countries, regions, sectors or enterprises. Skills anticipation is not manpower planning: it does not try to predict how many plumbers we will need in 2025. Skills anticipation examines how labour markets are developing and, consequently, how jobs, skills and learning needs are changing. It is not a crystal ball and makes no claim to being able to predict skills evolution with any certainty, but skills anticipation can signal current and possible future skill mismatches and inform decisions on how to address them.

Given the importance placed on the success of the planned economic development through the creation of economic zones, it is critical for Bangladesh to put in place a sophisticated labour market information system which can then feed into skills anticipation efforts.

For an Labour Market Information System (LMIS) to produce good quality information relevant and reliable data is required. Labour market information must consist of multiple flows of data on skills supply and demand from different sources, both quantitative and qualitative. The main quantitative data sources are:

- Population census
- Labour force (and other) household surveys;
- Public employment service (PES) statistics on vacancies and job seekers;
- Enterprise statistics: structure of employment in enterprises, wage statistics;
- Education statistics;
- Administrative data on tax, social insurance;
- Skill specific data sources;
- Sector studies;
- Employers surveys;
- Vacancy surveys;
- Tracer studies.

Quantitative information should always be accompanied by qualitative data, which can help to fill in the gaps where quantitative information is not available. They can also explain the context and add value to the numbers.

The main qualitative data sources are:

- Literature review including review of general press and internet sources;
- Consultation with companies, stakeholders and experts (Delphi surveys, workshops, scenario development, etc.);
- Foresight – qualitative analysis of long-term skills trends.
- Additional data sources
- Projections of labour demand and supply (quantitative forecasting models) that include time series based methods, structural based methods (simulation models) and a combination of different methods. These methods usually draw on the data sources mentioned above to produce information about future developments in the labour market.

International databases that are built in most cases on national surveys and statistics. Big data analysis and real time labour market intelligence sources. Nowadays, electronic-based technology of data generation, storing and dissemination prove a valuable source of information on labour market and skills changes. Though less standardised in prevouchersentation, availability, and comprehensiveness (for example, information on vacancies or job seekers available on social media platforms), they are taken more and more into consideration by many stakeholders and companies. Such information can provide very forward looking projections. This method has also been used in this report by HR Forecast to seek, collect and analyze data for future skills requirements for various sectors of the Bangladeshi economy.

It is important to use all available data sources to obtain a deeper and broader understanding of developments and trends in the labour market. This requires coordination of information flows and data-sharing between different governmental institutions and other entities. An important function for an LMIS is the integration of many different data sources into one comprehensive and usable data base or set of linked databases.

It is also important to know which data sources are available, their best possible use and efficacy^[1]

Data source	Strengths	Weaknesses
Labour Force Survey	<ul style="list-style-type: none"> ▪ provide structural information on individuals (age, gender, education, occupation) ▪ have the potential to cover informal employment 	<ul style="list-style-type: none"> ▪ costly ▪ usually do not cover population living outside households and in remote areas ▪ need large sample sizes to get robust data and enable detailed breakdowns ▪ political implications (particularly in countries with high ethnic or racial tensions)
Public Employment Service statistics	<ul style="list-style-type: none"> ▪ use of existing data, no need for additional data collection ▪ no sampling issues ▪ provide information on occupations, qualifications and skills in demand 	<ul style="list-style-type: none"> ▪ only flows, no information on stocks ▪ usually cover only a specific segment of the labour market
Enterprise statistics	<ul style="list-style-type: none"> ▪ direct information from companies ▪ complementary source to household statistics ▪ enable linking employment trends to business trends 	<ul style="list-style-type: none"> ▪ require developed infrastructure at statistical institute as well as company level ▪ often do not cover SMEs or some sectors ▪ do not cover informal economy
Employers survey	<ul style="list-style-type: none"> ▪ opportunity to get direct information at company level ▪ relatively easy execution 	<ul style="list-style-type: none"> ▪ more informative for current situation than future ▪ no information on population out of employment
Tracer study	<ul style="list-style-type: none"> ▪ relatively low cost ▪ relatively easy execution 	<ul style="list-style-type: none"> ▪ demand for detailed information about sample groups ▪ findings may be biased
Qualitative data sources	<ul style="list-style-type: none"> ▪ relatively cheap and easy to implement ▪ can be focused specifically on skills ▪ can bring more understanding of the underlying causes and processes 	<ul style="list-style-type: none"> ▪ subjective ▪ risk of overemphasising marginal issues ▪ partial, do not provide comprehensive information
Projections	<ul style="list-style-type: none"> ▪ provide future-oriented information ▪ provide structural information on labour supply and demand. 	<ul style="list-style-type: none"> ▪ very data hungry, need robust time series ▪ may give a false impression of bringing 'precise information as to what the future will be'

Below are two examples of how labour market information is effectively captured and used for decision making:

1. The European Union: the EU Skills Panorama is an online tool^[2] providing central access to data, information and intelligence on skills needs in occupations and sectors. It provides a European perspective on trends for skills supply and demand and possible skills mismatches, while also giving information about national data and sources. The EU Skills Panorama is managed by Cedefop.
2. Canada: the Canadian Occupational Projection System (COPS) has been producing analytical outputs and labour market information for nearly 30 years. The outputs of COPS are widely available to policy and labour market analysts. More importantly, COPS disseminates labour market information to the public through publications or online^[3].

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 3. EU Skills Panorama online tool: <http://skillspanorama.cedefop.europa.eu/en>
 4. Canadian Occupational Projection System Online Publication:
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