

Technical and Vocational Education and Training In Bangladesh

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Abstract: Technical and vocational education is absolutely essential to eradicate poverty and raise the standard of living of the people in developing countries like Bangladesh. Technical institution in Bangladesh was neglected during the British colonial period. The country did not do as much as it could have done during the period when the Bangladesh formed eastern part of Pakistan. Even after liberation from Pakistan, TVET did not progress as much as it did after 2000 when the number of technical institutions reached four-digits. Though the government is directly involved in the promotion of technical institutions, the private sectors contributed the lion's share in this area. In addition to formal TVET programs, there exist non-formal training centers catering to the needs of capacity building. TVET has significantly contributed to the transformation of agricultural economy to the advanced technology-based industrial economy. Bangladesh can learn from these countries to upgrade the status of TVET.

Keywords: Bangladesh, TVET, formal technical institutions, informal technical institutions, economic development

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Introduction

“While education is the key to development,” writes Rupert Maclean, “TVET is the master key, which opens the doors to poverty alleviation, rising standards of living, greater justice, equity and fairness in our various societies” (UNESCO, 2006a:59). Sustainable development and education for all is achievable only by providing access to high quality technical and vocational education and training (TVET) for all. TVET is viewed as the solution to the educational crisis and a tool for combating poverty and unemployment in many developing countries. This study, consequently, analyses the TVET system in Bangladesh, citing some examples of successful implementation of TVET system in other parts of the world. These cases are discussed in order to situate the TVET system in Bangladesh. Of necessity, the discussion is preceded by a historical Background of TVET in the eastern part of Bengal during British India (1757-1947) and East Pakistan under the government of Pakistan from 1947 to 1971. The study ends by reviewing the TVET structure in Bangladesh.

TVET in the Global Context

Many countries look to the TVET systems to respond to changes in the global economy. Linking industry with TVET systems is considered a central principle of policy reform in several countries. Germany has a long history of TVET and the country has made it compulsory to introduce TVET at the lower secondary level in all courses (Göhlich & Schöpf, 2011). Germany has adopted what is known as an interventionist approach. The German system allows youths to learn skills by working in the industry, allowing simultaneously studying theoretical subjects in schools. However, initial TVET starts at the upper-secondary level when students may choose from the range of programmes that include

full-time general education and vocational schools and vocational training within the dual system (Keck, 1993; Maclean & Pavlova, 2013).

In contrast, the UK adopted what is known as a voluntarist approach. The two systems differ in many respects. In the voluntarist system, there is little or no government interference, leaving the training of employees to the choice of the individual or the organisation, whereas in the interventionist or directed system, state legislation or regulation exists, which compels employers to train their staff. Nevertheless, The UK TVET system, however, allows the youths to upgrade their skills until they are fully employed (Tabbron and Yang, 1997). In UK, despite the provision for secondary technical schools in the Education Act 1944, only 0.5 per cent of British senior pupils were in technical schools by 1975. Successive British Governments, however, have made attempts to promote and expand vocational education (Bierhoff & Prais, 1997). In 1994, the UK introduced publicly-funded modern apprenticeships to provide quality training (Fuller & Unwin, 2003). The governments have been collaborating with industry in the growth of TVET, though many studies show a poor relationship between TVET and the economy (Finegold, 1991).

In USA, TVET is known as Career and Technical Education (CTE). TVET programmes are taught in non-parallel subsystems with few structural connections between them (Levesque et al, 2008; Fretwell, 2009). There were many efforts seeking to integrate TVET fully into the mainstream of US public education and overcome its second-class status (Zirkle, & Martin, 2012).

Among the developing countries, Korea has widely been credited for effectively supporting the rapid economic growth through its TVET system. Korea's education system is

divided into two tracks: formal education of elementary school, middle school, high school and college/university; and TVET. TVET is again divided into two categories: vocational education, from vocational high schools to vocational colleges; and, vocational training, from vocational training institutes of private/public sector and training centres within companies. The senior secondary schools and post-secondary institutions (junior colleges) are provided by TVET programmes, and the public vocational training is carried out by the Korea Manpower Agency (Sorensen, 1994; Green, Ashton, James, & Sung, 1999; Agrawal, 2013).

In Japan, there are three types of upper secondary school courses within the state school system for vocational education (Miyakawa, 2011). Japan's technical schools are provided with laboratories to develop the newest technologies. In order to acquire a high level of skill and competence, together with effective productivity, the government as well as the private sector spend a great deal of money on TVET to make a working relationship between the technical school and industry (Scarborough, 1986; Nonaka & Takeuchi, 199; Terada, 2003).

Malaysia has also been praised by international agencies for its TVET system (Leong, 2011). TVET programmes in Malaysia are offered at certificate, diploma, and degree levels by seven ministries, including the Ministry of Higher Education (MOHE), which offers the most TVET programmes to the highest number of students. There are more than 1,000 TVET institutions in Malaysia, over half of which (506) are public institutions (Noor & Symaco, 2017).

Historical Background of TVET in Bangladesh

The TVET system in Bangladesh is very much affected by the system that existed during the British, the Pakistani and the post-independence period. It is essential to analyse the TVET system as it prevailed during the three periods.

TVET During the British Period

The first technical school during the British era was a survey school in Madras (Chennai) in 1794 to train Indian personnel in land survey to assist British Surveyors (Singh & Solanki, 2016). Then, the British started the technical education programmes in India to produce qualified people to oversee the construction of roads, bridges, buildings, railways, canals, and docks, etc. (Gupta, 2016). Simultaneously, lower grade technicians were also trained in the use of measuring and survey equipment needed for the army, navy and other technical establishments for the perpetuation of the colonial system of the British crown. The instructors for those training schools were mostly British, except the lower grade instructors like craftsman and artisans hired from among the local population

In 1854, the famous Wood's Despatch recommended the establishment of an engineering class at each Presidency. In 1874, the Ahsan Ullah School of Engineering, at present Bangladesh University of Engineering and Technology (BUET), was established. It was the only center for technical education in the Assam and undivided Bengal (BUET website, 2017). In 1882, the Rangpur Polytechnic institute (previously known as Rangpur Baily Gobing Lal Technical School) was established followed by the establishment of the Survey Institute in Comilla, in 1892. The Indian Education Policy (1902) advocated a speedy growth of technical education. From 1902 to 1921, technical and vocational subjects were included in the curricula of high schools in different provinces. Then, according to the suggestion of

the Abbot-Wood Report, 1936-37, a new type of technical institutions called “Polytechnics” came into existence for the training of middle level technical personnel.

Table 1.1 Technical institutions according to establishment period
(Independent Institution) 2014

Management	Before 1947	1947-1971	1972-1990	1991-2000	2001-2013	Total
Public	21	42	33	17	124	237
Per cent	8.86	17.72	13.92	7.17	52.32	100.00
Private	1	3	20	248	1094	1366
Per cent	0.07	0.22	1.46	18.16	80.09	100.00
Total	22	45	53	265	1218	1603
Per cent	1.37	2.81	3.31	16.53	75.98	100.00

Source: Hoque, A. E. (2016). Quality assurance as a way to support labour markets: a reflection on TVET policies in Bangladesh. In: TVET@Asia, issue 7, 1-17. Online: http://www.tvet-online.asia/issue7/hoque_tv et7.pdf (retrieved 2.8.2016).p.3

Pabna Polytechnic Institute began in 1924. The Government Science College in Dhaka started in 1934 as Technical High School which, in 1962, changed its name to "Intermediate Technical College". As shown in Table 1.1, during the colonial period, i.e. prior to the partition of India in 1947, there were 21 public and only one private technical institute in the region, which subsequently emerged as Bangladesh (Hoque, 2016).

TVET in East Pakistan

From 1947 to 1971, the government of Pakistan took some interest and was quite successful in spreading technical education. The East Pakistan (Now Bangladesh) Government laid emphasis on developing technical education and making technically skilled manpower available for agriculture, industries, health care and so on. Until 1971, when Bangladesh became independent, there were 45 technical institutions, of which 3 were privately owned (see Table 3.1). In 1951, “East Bengal Ceramics Institute” was established, and in 1960 the institute was renamed “East Pakistan Institute of Glass and Ceramics” (BIGC website, 2017). In 1955, Ahsan Ullah Engineering School was upgraded to a college and

renamed Ahsan Ullah Engineering College (BUET website, 2017). Based on recommendations of the Council of Technical Education in Pakistan in 1949, two polytechnic institutes were established in 1955, one of which was in Dhaka known as East Pakistan Polytechnic Institute (EPPI), which was re-named Dhaka Polytechnic Institute (DPI website, 2017). This Institute received financial assistance from the Ford Foundation of America. In 1955, the Ford Foundation also established Polytechnic Institutes at Dhaka, Rangpur, Bogra, Barisal and Sylhet. These institutions would offer 3 year-long courses, following the syllabus of Oklahoma State University (DPI website, 2017).

During the 1960s, the Government of East Pakistan established many Polytechnic Institutes in different districts of East Pakistan. Technical and engineering education was given greater attention and Technical education at the diploma level was also encouraged. The existing engineering college at Dhaka was upgraded into a University, and two new engineering colleges were established at Chittagong and Rajshahi. The process of establishing one polytechnic institution in each major city began and thus, 17 polytechnic institutes were set up in the then East Pakistan (Hoque, 2016).

In 1962, “BL Eliot Technical School became “Pabna Polytechnic Institute” (PPI website, 2017), and polytechnic institutes in Chittagong (CGPI website, 2017) and Comilla (CPI website, 2017) were established. Polytechnic institutes in Mymensingh (MPI website, 2017), Khulna (KPI website, 2017), and Rajshahi (RPI website, 2017) were established in 1963. In that year, with the help of the Swedish Government, Bangladesh Sweden Polytechnic Institute (BSPI website, 2017) at Kaptai was established. Faridpur Technical Institute, established in 1963, was transformed into Faridpur Polytechnic Institute in 1967 (FPI website, 2017). Polytechnic institutes in Dinajpur (DPI website, 2017) and Habiganj

(HPI website, 2017) were established in 1964. Feni Technical Institute, established in 1964, became Feni Polytechnic Institute in 1972 (FPI website, 2017). Similarly, Jessore Technical Institute, established in 1965, became Polytechnic Institute in 1969 (JPI website, 2017). The Bangladesh-German Technical Training Centre was established in 1965 (BGTTC website, 2017). The Graphic Arts Institute, as the only Government Printing & Design Institute in Bangladesh, was established in Dhaka in 1967 (GAI website, 2017). During the decade (1958-1969) ruled by General Ayub Khan, 51 Vocational Training Institutes (VTIs) were established. VTIs were established to produce skilled manpower for more productive and more rewarding jobs and ultimately for the development of the country. Moreover, the Technical Teachers Training College (TTTC) was established in 1960, and it emerged as a separate college called the Technical Education College (TEC) in 1964. Finally, the college was renamed the Technical Teachers' Training College in 1967 (TTTC website, 2017).

Trend of TVET Development, 1972-2014

During the period from 1972 to 1990, after independence, Bangladesh witnessed three regimes led respectively by Sheikh Mujibur Rahman, General Ziaur Rahman and General Ershad. During this period, only 53 technical institutions were established. The period from 1991 to 2000 can be marked as another dismal decade of establishing technical institutions through government initiatives. Putting aside the quality assurance issue, compared to any period in the history of Bangladesh, the period from 2001 to 2013 can be labelled as the golden era of technical education. Of the total 237 public and 1,366 private technical institutions, 124 public (around 52 per cent) and 1,094 private institutions (around 80 per cent) were established from 2001 to 2013.

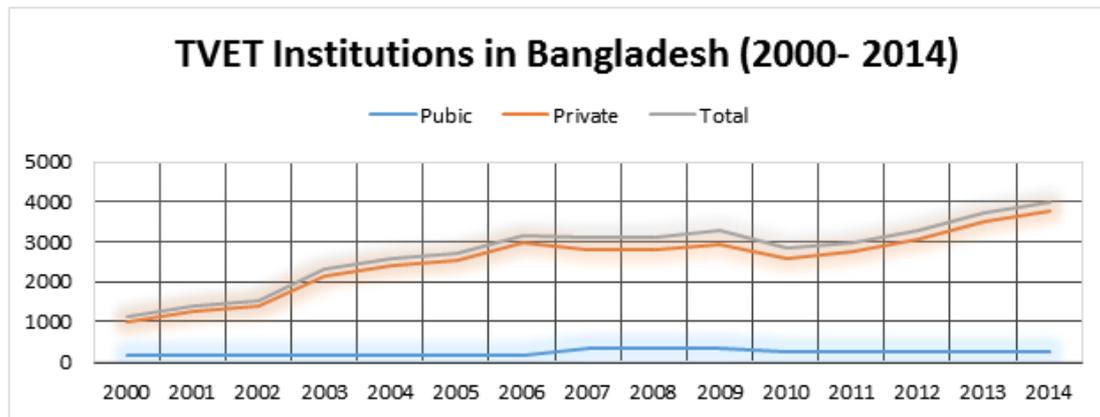


Figure 1.2: Trends of TVET institutions in Bangladesh for 2001-2014 periods
(Source: BANBEIS, 2015)

The trends of TVET institutions in Bangladesh for 2001-2014 are shown in Figure 3.1. In the 2001 to 2014 period, Bangladesh experienced three governments. The 2001 to 2006 period was ruled by four party alliances under the premiership of Begum Khaleda Zia, BNP Chairperson; the 2007 to 2008 period was ruled by the Fakruddin Ahmed led interim government, and the 2009 to 2013 period was ruled by fourteen party alliances under the premiership of Sheikh Hasina Wazed, Awami League Chairperson. The performance of the two regimes in terms of the establishment of TVET institutions shows two completely opposite scenarios. From 2001 to 2006, the number of public TVET institutions increased from 143 to 186, while during the period of 2009-2013, the number decreased from 345 to 245. However, the number of private TVET institutions shows increasing trends over the years. In terms of encouraging private initiatives, 2001-2006, the government was more successful compared to the 2009-2013 government. During the 2001-2006 period, the number of private TVET institutions increased from 994 to 2,987 (around 200 per cent), while the number decreased to 2,781 in the period of interim government, and again during the 2009-2013 period, the number increased to 3,518 (27 per cent) (Hoque, 2016).

The Structure of TVET System

The government, non-government institutions and private sector provide TVET through formal, non-formal and informal means. Those students of formal education who have obtained at least lower secondary are eligible to enroll in the formal TVET programmes (Kashem, Chowdhury, & Shears, 2011). On-the-job training is usually referred to as a part of TVET, which is mainly an informal way of skill development in Bangladesh. In their study, Kashem, Chowdhury, & Shears (2011) claim that on-the-job training has been a major vehicle to run the production of the country and thus contribute to economy.

Before the mid-1990s, the majority of TVET institutions accommodated boys. The Mohila Polytechnic Institute, established in 1985, was the only polytechnic for girls. Other institutions had barely any female enrolment (DTE website, 2017). The entry of girls in TVET institutions began to increase in the mid-1990s, when the Government undertook a policy to expand TVET-programs. The policy adopted for expansion eventually resulted in the diversification of secondary education into several streams, including the Vocational Education Stream. The Vocational Education stream included SSC (Voc), HSC (Voc), HSC (B.M) etc. Special Basic Trade Courses were also introduced as optional subjects for SSC (general) stream. TVET structure is shown in Figure 1.3.

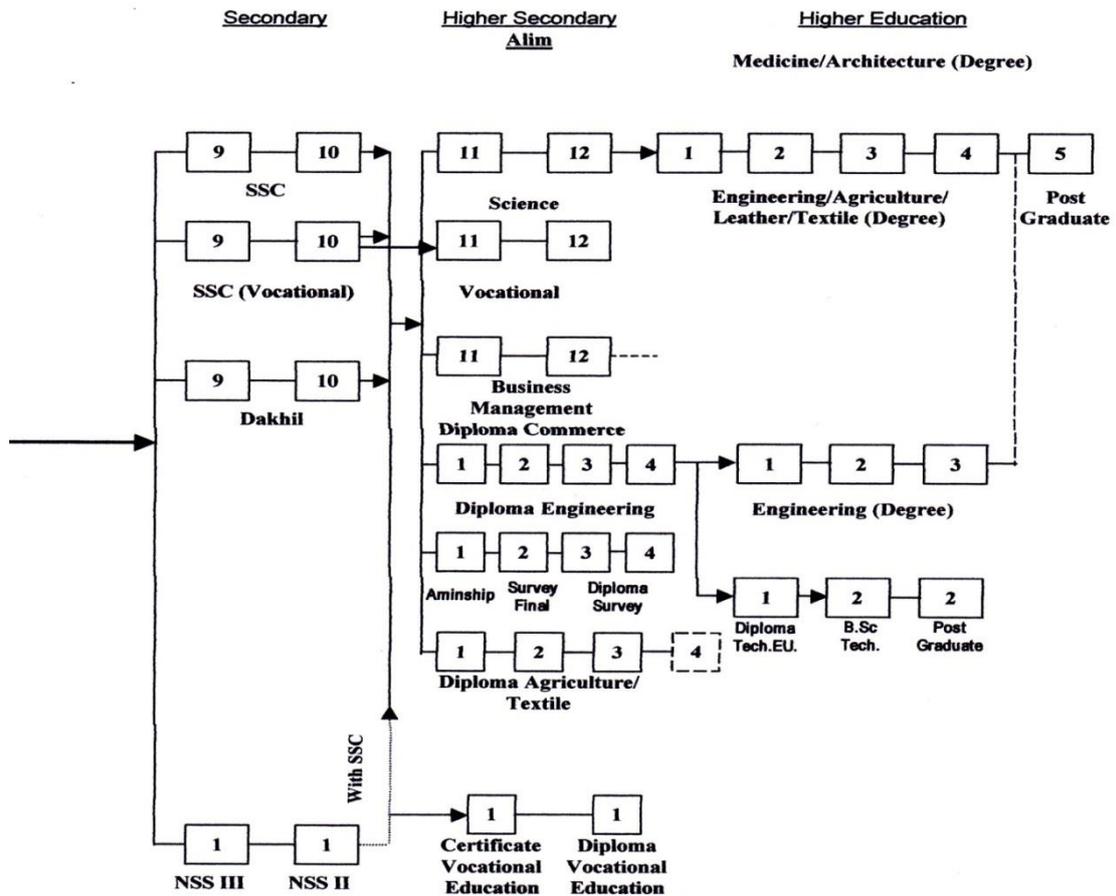


Figure 1.3: TVET Structure
Source: JBIC (2002:23)

Formal TVET / Public Providers of TVET

Formal TVET consists of SSC, HSC, and Diploma courses. DTE and BTEB oversee TVET provided by both public and private institutions. The programmes include time-bound, institution-based, and graded training with formal certification. The courses are offered by vocational training institutes (VTIs), polytechnics, commercial institutes, technical training centers (TTCs) and specialized institutes (ADB, 2015).

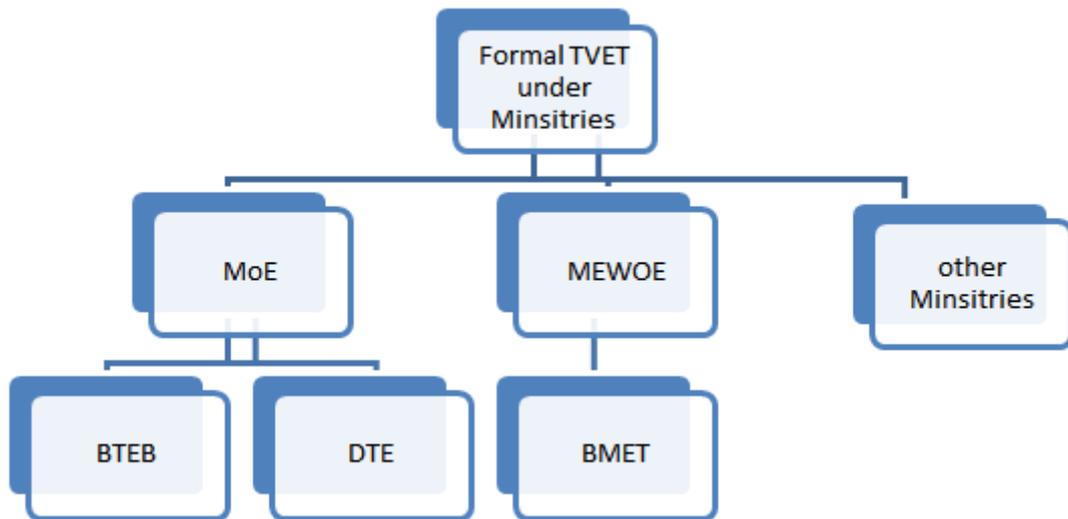


Figure 3.3 Formal TVET and Public Providers of TVET

The Figure 3.3 shows the TVET programs under different ministries and departments. To oversee TVET development in Bangladesh, the government has established the National Skills Development Council (NSDC) in September 2011 as the main coordinating and policymaking body (NSDC website, 2017). It is to oversee and monitor all activities related to the development of skill and training required for both public and private provisions. As an apex body, its duties include, among others, to provide the guidelines to design laws related to human resource development and training; to coordinate activities for making course and curricula and to ensure that the institutions working under the different ministries and agencies are using the best capacity for a greater intake and enrollment in an utmost way. The Ministry of education (MoE), the Ministry of Expatriate Welfare & Overseas Employment (MEWOE), and other ministries are directly under NSDC (ibid). BTEB and DTE lead TVET education under the Ministry of Education (MoE website, 2017), followed by the Bureau of Manpower, Employment and Training (BMET) under the Ministry of Expatriate Welfare and Overseas Employment (MEWOE website, 2017).

Bangladesh Technical Education Board (BTEB)

BTEB is solely responsible for curriculum development, assessment and certification of TVET students. It also develops and regulates formal TVET programs, namely NSS Basic, NSS-II, SSC (Vocational), HSC (Vocational) and diploma level programs. At the same time, BTEB is regulating short-term skill courses across the country (BTEB website, 2017). As stated in the National Skills Development Policy (NSDP), implementing a training and assessment system based on competency is the priority of BTEB. In this system, achievement is measured against each of the competency standards, and progress is determined by meeting standards and not by time spent in training (GoB, 2012b).

The East Pakistan Technical Education Act of 1967 laid the formation of BTEB as a statutory body. Though BTEB is affiliated with MoE, it is a body of academic control over TVET institutions run by any ministry. In recent times, BTEB has taken many noble initiatives to further TVET and ensure its quality. Firstly, the National Technical and Vocational Quality Framework (NTVQF) has been developed to establish a common national benchmark for ensuring qualification and recognition of knowledge and skills internationally. Secondly, Competency-Based Training and Assessment (CBT & A) has developed where greater emphasis has been placed on the demonstration of practical skills required by industry. Thirdly, a National Skills Quality Assurance System (NSQAS) has been introduced to ensure high quality training and assessment services (Hoque, 2016). Moreover, BTEB assesses and determines demands for skills in both the domestic and international job markets. It revises and updates curricula, and introduces emerging trends and technology to ensure relevance to the job market (BTEB website, 2017). All registered public and private training institutions which offer basic, SSC Voc, and diploma courses provide data on enrollment and graduation to BTEB. The major functions of BTEB are to develop learning materials, prescribe courses of instruction, grant affiliation/approval to institutions, arrange

for distance learning, monitor teaching-learning activities of institutions, set regulations for admissions and transfer of students, and conduct and regulate examinations and grant diplomas. BTEB provides training activities in other Ministries. The Board has two main sections: Directorate of Curriculum and Textbooks and Directorate of Examinations (World Bank, 2000).

Table 3.2 Enrolments at Diploma-Level (Technical Institutions by Ownership), 2011

Type of Institutions	Institutions (no.)			Students (no.)		
	Public	Private	Total	Public	Private	Total
Diploma total	76	309	385	101,766	57,320	159,086
Polytechnics subtotal	51	149	200	75,412	42,603	118,015
Monotechnic subtotal	25	160	185	26,354	14,717	41,071
Of which						
Agriculture training institutes	14	137	151	22,020	10,846	32,866
Graphic arts institute	1	-	1	632	-	632
Glass and ceramics institute	1	-	1	1,100	-	1,100
Marine technology institute	1	-	1	1,500	-	1,500
Survey institutes	2	-	0	768	-	768
Textile institutes	6	23	29	334	3,871	4,205

Source: ADB (2015), *Innovative strategies in technical and vocational education and training for accelerated human resource development in South Asia: Bangladesh*. Manila: Asian Development Bank.p. 10

A 4-year diploma in post-secondary engineering is offered in polytechnic and mono-technic institutes. The degree is accredited by BTEB. According to the statistics of 2011, 385 polytechnic and mono-technic institutes offered diploma courses where 159,086 students enrolled (Table 3.2). 42 training programs were offered in 76 public institutes where enrolment was more than one hundred thousand. Six courses were offered in 25 mono-technic institutes. All public TVET institutes are operated by MoE. The ministry administers through DTE. However, the exceptions are the Bangladesh Institute of Marine Technology (BIMT) in Narayanganj, Dhaka, is operated by BMET, and the Agriculture Training

Institutes, located at different districts, are supervised by the Agriculture Extension Department.

All 64 districts in Bangladesh have a Technical School and College (TSC). Earlier TSCs were operated as vocational training institutions (VTIs). It was transformed into schools and colleges with the introduction of the SSC Voc. and HSC Voc. certificate training programs in 1995. DTE gives permission to TSCs to operate certificate programs, and TSCs also offer short courses. Moreover, all 38 Technical Training Centers (TTCs) are operated by BMET. The Institute of Marine Technology is also a part of TTCs. In these TTCs, SSC Voc. and short training courses are offered to cater to the needs of industries within Bangladesh and abroad. Customized courses are offered at the request of the organizations. For example, the Bangladesh police force requests that special training be offered for those selected for peacekeeping missions. To train manpower for the leather industry, TTCs also have a contract with Apex Leather Industry (Interview with former secretary, ministry of education, (GOB, March, 2017 Kuala Lumpur). Moreover, non-formal customized courses are offered for migrant workers from TTCs.

Table 3.3 Number of Institution, Teacher and Enrolment by Type, 2014

Type of Institute	No. of Inst.	Teacher			Enrolment		
		Total	Female	Per cent of female	Total	Girl	Per cent of girls
S.S.C Vocational, HSC Voc./ B. Management	3,255	18,567	4,140	22.30	3,76,854	1,37,315	36.44

Polytechnic Institute	286	4,665	761	16.31	1,70,069	19,263	11.33
Technical School & College	170	2,306	420	18.21	64,926	13,752	21.18
Agriculture Training Institute	109	960	191	19.90	29,493	6,462	21.91
Technical Training Centre	104	1,300	216	16.62	28,769	9,999	34.76
Textile Institute & Vocational	83	865	154	17.80	15,645	2,104	13.45
Survey Institute	4	55	7	12.73	1,249	67	5.36
Glass & Ceramic Institute	1	13	3	23.08	1,047	54	5.16
Graphic Arts Institute	1	15	4	26.67	695	52	7.48
Marine Technology	1	52	5	9.62	916	106	11.57
Total (Tech & Voc Edn.)	4,014	28,798	5,901	20.49	6,89,663	1,89,174	27.43

Source: BANBEIS (2014), *Education Database*. <

http://data.banbeis.gov.bd/index.php?option=com_content&view=article&id=1216:table-75-number-of-institution-teacher-and-enrolment-by-type-management-and-sex-2012&catid=178:technical-and-vocational-education-2014&Itemid=243> viewed on 13May 2016

Table 3.3 provides recent statistics of TVET institutions in Bangladesh. At present, according to BANBEIS Educational Database 2014, there are 4,014 technical and vocational educational institutions in Bangladesh. Out of these, 3,255 (about 80 per cent) of the institutions are offering S.S.C. vocational and HSC vocational/B. Management. Polytechnic institutions are among the second largest categories of TVET institutions (public and private), comprising 286, which represents around 7 per cent of the total TVET institutions. The number of Technical School & College, Agriculture Training Institute, Technical Training Centre, and Textile Institute & Vocational are altogether 466, which represents almost 12 per cent of the total TVET institutions. Data on teacher and student enrollment shows a picture of male dominance in the TVET system. Women are underrepresented, forming only 20 per cent of female teachers and around 27 per cent of female students. Girls represent around 37 per cent. Girls are enrolled in S.S.C. Vocational, H.S.C. Voc. /B. Management and are least represented in Survey Institute and Glass & Ceramic Institute.

Directorate for Technical Education (DTE)

The supervision of 117 TVET institutions including 64 TSCs, 49 polytechnic and mono-technic institutes, 1 TTTC, and 1 VTTI is a confirmation of DTE as the largest TVET provider in Bangladesh. In 1960, DTE was established to manage and administer TVET institutions, develop TVET programs, and implement quality control mechanisms. DTE is

also involved in the approval process of qualified institutions to MOE for monthly payment orders (MPO)² (DTE website, 2017). To reform, reorganize, and refurbish TVET systems, DTE undertakes many new projects, establishes new TSCs and diploma institutes where diploma-level courses are offered. A number of works are provided by DTE, including distance learning through educational media and technology, curriculum development, educational policy and reforms, research and training. DTE is responsible for planning, coordinating and supervising the vocational and technical education activities of the Ministry of Education (Ibid). The main functions of DTE are to assess the needs of skilled manpower, prepare TVET policies, plan and supervise development projects in TVET, and prepare budgets and allocate funds for TVET.

One of the priorities of DTE is to increase the number and ratio of students in VTE. How this can be made responsive to market signals and cost-effective, overcoming quality and efficiency problems faced by existing training activities is the major issue for DTE (ibid).

TVET in Bangladesh operates at Diploma and Certificate levels. Table 3.4 (below) describes the categories of institutions, and their total numbers and capacities, both public and private. These programs and courses include the broad areas of engineering, business, agriculture, forestry, printing, textile, photography, leather, IT etc, and are of various durations, such as, diploma - 4 or 2 yrs, certificate – 2 years, 1 year or 360 hrs.

Table 3.4 TVET institutions: category and intake capacity

Sl. No.	Curriculum	Public (Nos.)		Private (Nos.)		Total (Nos.)	
		Institute	Seat	Institute	Seat	Institute	Seat

² MPO is a scheme of a government subsidy from which the 100 per cent basic salaries of teachers and staff of private training providers are paid.

1	Diploma	87	25,170	1,005	108,974	1,092	134,144
2	HSC	67	8,550	1,802	189,700	1,869	198,250
3	SSC	141	18,900	2,515	189,520	2,656	208,420
4	Certificate	3	540	172	8,490	175	9,030
5	National Skills Standard	142	13,710	1,839	150,890	1,981	164,600
Total		440	67,070	7,333	647,574	7,773	714,644

Source: BTEB (2016), *A Report on Enrollment Analysis in TVET under Bangladesh Technical Education Board*. Dhaka: BTEB, p. 20

DTE, under MoE, administers TVET through its 64 Technical School and Colleges (TSC) and 49 Polytechnic Institutes across the country. Under DTE, one Technical Teachers' Training College (TTTC) and one Vocational Teacher Training Institute (VTTI) cater to the need for the training of technical teachers. In FY2015-16, as many as 29,958 students have been enrolled in 49 Polytechnic Institutes and 44,797 students in 64 TSCs enrolled. Polytechnic Institutes, Technical Schools, and Colleges (TSCs) have structured training facilities with necessary tools and equipment to deliver effective training. The DTE also manages an MPO (Monthly Pay Order) scheme for about 1,626 private training institutes. MPOs constitute 100 per cent of the basic salary of the instructors and staff engaged in those institutes.

Bureau of Manpower, Employment and Training (BMET)

BMET was established in 1976. It is an agency of the Ministry of Manpower Development and Social Welfare (MMDSW). The Ministry of Labor, with its training departments of the BMET, runs the Technical Training Centers (TTC). TTC develops human resource that can comply with domestic and export requirements. For utilizing human resources properly, BMET designs an overall plan and implements strategies. At present, 37 TTCs, 42 district employment and manpower offices, three apprenticeship offices and one

marine institute are operated by BMET, which offers institutional diploma-level courses, SSC Voc. courses, NSS II and NSS III trades. In addition, BMET designs special courses, tailor-made short courses, and industry-based training. 44 certificate courses, ranging from 21 days to 6 months were designed by BMET which were reviewed and updated in 2007. In 2010, around 60,000 graduated from 38 BMET institutes (BMET website, 2017).

The major functions of BMET include the following:

- a) processing foreign demand for Bangladeshi workers,
- b) control and regulation of recruiting agents and the legal process of manpower export,
- c) overseeing the welfare of migrant workers,
- d) providing institution-based TVET in different trades,
- e) planning and implementing development programs for training activities,
- f) conducting informal and special training courses,
- g) registering job seekers for the overseas market in the Computer Database Network, and
- h) collecting and disseminating labor market information.

The BMET under the MEWOE operates its functions for developing skilled workforce for the local and international labor market. It has scaled up technical education programs to establish an additional 27 new Technical Training Centers (TTCs) and five Institutes of Marine Technology (IMTs) in different locations across the country. A total of 64 TTCs and six IMTs offer a wide range of courses to address the skill needs of the migrants and the new entrants seeking jobs. The Seventh Five Year Plan emphasizes the needs for the establishment of another 40 Technical Training Centers (TTCs) in 40 Upazilas and one Institute of Marine Technology (IMT) to address the skills needs of the people living in the

remote areas of Bangladesh. BMET has established linkages with the industries of various sectors to provide a skilled workforce for meeting skills demands. It customizes the training programs based on the demands of national and international job markets (ibid).

Other Ministries/ Formal Training of 23 ministries/divisions

Training is an integral part of skills development. Training programs are run both under revenue budget and development projects/programs. It was found that a total of 23 ministries/divisions provide skills training through their attached departments/directorates. The aim of such training programs is to develop skills both for those who are already employed and for those who are new entrants in the labor market. Skills training programs under the Ministry of Education have been discussed earlier in the section of BTEB and DTE, while the Ministry of Expatriates' Welfare & Overseas Employment is discussed in the section of BMET. Other ministries and divisions that run skills training programs and their outcome are summarized in Table 3.5 (a) and Table 3.5 (b):

Table 3.5 (a) TVET programs under different ministries

No	Programs and Outcomes
1	<p>Ministry of Health & Family Welfare 43 public nursing institutes under the Directorate of Nursing Services (DNS) offer Diploma level program on Nursing Science and Midwifery, produce more than 2,000 nurses annually³. Directorate General of Health Services (DGHS) provides Diploma in Health Technology. Eight public Medical Assistant Training Schools produce 716 Medical Assistants every year and eight Institutes of Health Technology (IHT) provide training to produce Medical Technologists.</p>
2	<p>Ministry of Textiles and Jute Textile Engineering College, 40 Textile Vocational Institutes (TVI) and two Textile Institutes under Department of Textiles (DOT) offer a four-year bachelor course in Textile Engineering, Diploma in Textile Engineering and a two-year SSC Vocational course in textile. In 2015, 188 students completed B.Sc. in Textile Engineering, 363 students completed Diploma in Textile Engineering and 2,616 students completed SSC Textile Vocational course. Around 290 weavers were trained through four training centers to enhance their professional skills.</p>

³ Bangladesh Nursing Council (BNC) acts as a National Education Board to control and monitor academic affairs of public and private nursing institutes in Bangladesh.

3	<p>Ministry of Planning The National Academy for Planning and Development (NAPD) provides around 8,000 people training to government officials, NGO staff and the staff of private organizations.</p>
4	<p>Ministry of Primary and Mass Education National Academy for Primary Education (NAPE) provides training for the up-skilling of managerial capacity and offers training courses on ICT/Computer Application.</p>
5	<p>Ministry of Social Welfare The Department of Social Services (DSS) manages training centers located across the country include Socio-economic Training Centers; Vocational Training and Production Centers for the Destitute Women; Regional Training Centers. Some of the major training programs are- (i) Tailoring (ii) Electrical House Wiring (iii) Block Batik and Screen Printing (iv) Basic Computer (v) Food Processing (vi) Carpentry (vii) Industrial Sewing Machine Operation (viii) Mechanical Workshop (Lathe, Milling & Welding).</p>
6	<p>Ministry of Women and Children Affairs 1) The Department of Woman Affairs (DWA) provides training to women through its Women Training Centers (WTCs) located across the country. A wide range of courses that include (i) Fisheries, Agriculture and Poultry, (ii) Beautification, (iii) Mobile Phone Servicing, (iv) Bakery and Pastry, (v) Nursery, (vi) Tailoring, (vii) Housekeeping, (viii) Readymade Garment, and (ix) Basic Computer. 2) Jatiyo Mohila Sangstha (JMS) provides livelihood training to destitute women and basic computer training to staffs. It also provides training on (i) Food Processing (ii) Interior Design (iii) Block Batik and Screen Printing.</p>

Table 3.5 (a) Continued

No	Programs and Outcomes
7	<p>The Ministry of Communication and Information Technology Bangladesh Computer Council (BCC) provides skills training for SSC or HSC students, and offers training programs on ICT for the government officials. Training programs are: Graphic Design & Multimedia, Website Design and Web Application Development, Online Marketing and Search Engine Optimization (SEO). BCC trained 102,887 people on ICT and a total of 80 people with disabilities in last three years.</p>
8	<p>Ministry of Information The National Institute of Mass Communication (NIMCO) training programs include- Television Drama Production Course; Basic Training for Broadcasting Technicians; Introduction to Digital Cinema Production; Digital Photography; Techniques of Bangla News Casting; Radio Program Production; Film Production; Computer Graphics & 3D Animation; and Radio and Television News Reporting etc. The Press Institute of Bangladesh (PIB) conducts training for newspaper, radio, television, information personnel and public relations officials.</p>
9	<p>Ministry of Youth and Sports The Department of Youth Development (DYD) has 110 Youth Training Centers across the country. The DYD provides both institutional and informal/mobile trainings. The DYD also provides loans to the trained youth to help them start their own businesses. The DYD produces about 300,000 graduates per year.</p>
10	<p>Ministry of Industries The Bangladesh Industrial Technical Assistance Center (BITAC), Bangladesh Institute of Management (BIM), Skill Development Center (SDC), National Productivity Organization (NPO), and Small and Cottage Industries Training Institute (SCITI) provide trainings. Moreover, Bangladesh Small and Cottage Industry Corporation (BSCIC) have 15 Skills Development Centers. In FY 2014-2015 and 2015-2016, a total of about 4,000 trainees received training in BSCIC programs, 1,020 people was trained in</p>

the Design Center of BSCIC and National Productivity Organization (NPO) trained around 3,000 people.

11	<p>Ministry of Agriculture The Department of Agriculture Extension (DAE) operates a total of 14 Agricultural Training Institutes (ATIs) located in various districts where diploma program in agriculture are offered. Courses are accredited with BTEB.</p>
12	<p>Ministry of Fisheries and Livestock The Department of Fisheries gives training through nine institutes located across the country. Fisheries Diploma Institute (FDI) in Chandpur offers a 4-year Diploma in Fisheries which enrolls 25 students per batch. The Department of Livestock Services (DLS) operates two Veterinary Training Institutes (VTIs) and one Livestock Training Institute (LTI) which offer a two-year course on Diploma in Animal Health and Production.</p>
13	<p>Ministry of Environment and Forests (MoEF) Three institutes offer a Diploma in Forestry course, registered with BTEB, had enrollment of about 100 trainees in 2015.</p>
14	<p>Ministry of Shipping Three Maritime Institutes train seamen, inland and sea-going personnel. The National maritime Institute in Chittagong conducts the following courses: (i) Personal Survival Technique, (ii) Steering/Bridges Simulator Course, (iii) Basic Computer Course etc.</p>

Table 3.5 (a) Continued

No	Programs and Outcomes
15	<p>Ministry of Railways Bangladesh Railways offers a wide range of courses through four Workshop Training Units (WTUs) and one Railway Training Academy (RTA) located in Chittagong. Bangladesh Railways designs and develops training modules for up-skilling the staff involved in regular repair, maintenance and services of locomotives. The courses include the following: (i) Basic Courses on Mechanical, Electrical, and Electronic; (ii) Special Course on Cooling Systems, Advanced Tools, Compressor and Air Brake, Engine Oil and Fuel System, Engine Governor, and Relay and Magnetic Conductor.</p>
16	<p>Ministry of Civil Aviation and Tourism Bangladesh Parjatan Corporation (BPC) the National Hotel and Tourism Training Institute (NHTTI) located in Dhaka. The diploma level courses of the Institute are: (i) Diploma in Hotel Management, (ii) Diploma in Tourism Management, (iii) Professional Chef Course. The certificate level courses include: (i) Food and Beverage Production, (ii) Food and Beverage Service, (iii) Travel Agency and Tour Operation.</p>

Source: GOB (2016), *Skills Development: A Priority Agenda for Accelerated Growth*. Dhaka: Ministry of Finance, p.18-31

Table 3.5 (b) TVET programs under different divisions

No	Programs and Outcomes
17	<p>Local Government Division LGED has 14 Regional Training Centers (RTCs) located in 14 districts that provide a wide range of courses such as Quality Control (Soil, Bitumen, Cement and Concrete Test), Sanitation and Plumbing, Plain Table and Leveling Survey, etc. LGED customizes training courses depending on the needs of job roles and skills set of the occupations.</p>
18	<p>Rural Development and Cooperatives Division Bangladesh Rural Development Board (BRDB) runs Bangladesh Rural Development Training</p>

Institute (BRDTI), Noakhali Rural Development Training Institute, Tangail Link Model Training Institute (TLMTI) and Bangabandhu Poverty Alleviation and Training Center (BPATC). The training programs focus on the development of fisheries and shrimp culture, hatchery and nursery management process, etc.

19 **Energy and Mineral Resources Division**

Bangladesh Petroleum Institute (BPI) conducts training programs in (i) Engineering Construction & System Analysis, (ii) Gas Metering and Pipeline Control System, (iii) Cathodic Protection, (iv) Natural Gas Pipe Line Welding & NDT etc.

20 **Road Transport and Highways Division**

Bangladesh Road Transport Corporation (BRTC) manages 17 training institutes. They offer various courses such as (i) Basic Driving (Light Vehicles), (ii) Basic Driving (Heavy Vehicles), (iii) Upgrading Driving (Light and Heavy Vehicles)

21 **Power Division**

Bangladesh Power Development Board (BPDB) has two training Academies, three training centers, one regional training center⁴. Trainings are provided for the new entrants as well as for the existing workforce. Bangladesh Rural Electrification Board (BREB), DESCO and Dhaka Power Distribution Company Ltd. (DPDC) have training academy to train their employees.

Source: GOB (2016), *Skills Development: A Priority Agenda for Accelerated Growth*. Dhaka: Ministry of Finance, p.18-31

Private Providers

In Bangladesh, many Ministries and agencies deliver formal and informal skills training, as discussed earlier in the context of industry and community development. However, the public sector alone cannot meet the overall TVET demand in the country. Thus, it is obvious that many private training organizations, NGOs and donors came to the front to deliver skills training, both formal and informal. In fact, private providers have the lion's share in TVET development in the country, constituting about 95 per cent of institutions and about 75 per cent of total enrollment (Comyn, 2009). The report of ADB on TVET in Bangladesh classifies six types of private providers of TVET (ADB, 2015), as follows:

1. Publicly subsidized private providers
2. Private for-profit (commercial) providers.
3. Nongovernment organizations (NGOs)
4. Industry training institutions
5. Enterprise-based training.

⁴ The training Centers are: Engineering Academy, Kaptai, Rangamati; Training Academy, Cox's Bazar; Chittagong Training Center; Ghorasal Training Center, Narsingdi; Rajshahi Training Center; Regional Training Center, Tongi, Gazipur.

6. Routine apprenticeship and
7. Training in the non-formal segment.

A brief discussion on these private providers is given in the following sections.

Publicly subsidized private providers

There exist a total of 1,600 government approved accredited private training institutions for MPOs initiated by DTE (ADB, 2015). Of these, 728 were technical colleges employing 3,127 teachers, 854 SSC Vocational institutes with 4,633 teachers, and 18 Madrasah (vocational and business management) with 96 teachers. TVET providers, in the private sector, follow the curriculum of BTEB. The staff also receives partial salary support from the government.

Private for-profit (commercial) providers

Many commercial institutions are offering short training courses for people who are seeking jobs and intend to go abroad. They are affiliated with BTEB. At present, there are 309 commercial polytechnic and mono-technic institutes. The courses and duration of study vary from one institute to another (ADB, 2015).

Nongovernment organizations

NGOs are basically offering a variety of training courses to bring poor and underprivileged people into the world of work, so that poverty can be eliminated. The prime focus of NGO-managed TVET programs is to create opportunities for income generation and self-employment. To provide skilled manpower to industry, some major NGOs are seen to focus exclusively on non-formal TVET. The Underprivileged Children's Educational Programs (UCEP), the Dhaka Ahsania Mission, and MAWTS are among the leading NGOs providing

innovative and quality TVET, with their uniquely designed and delivered programs (ADB, 2015).

Industry training institutions

Transforming BGMEA Institute of Fashion and Technology (BIFT) into BGMEA University of Fashion and Technology (BUFT) is an important milestone in providing industry based training self-financed by the association of garments owners, Bangladesh Garments Manufacturers and Exporters Association (BUFT website, 2017). Following this model, several industry-based organizations have come forward to establish their own training centers. For example, Dhaka Chamber of Commerce and Industry (DCCI) run a business institute and the Chittagong Skills Development Center shows a model of industry-government cooperation (ADB, 2015).

Enterprise-based training.

Many enterprises and corporations have training facilities on their own premises. This is because current training providers are unable to realize the demand for skilled workers in the growing industry (ADB, 2015).

Traditional apprenticeship and training for the informal sector.

This is an informal way of developing skills. A person can inherit skills from a master craftsman. In most of the cases, a novice is trained by a master in exchange for low wages or food. This kind of master-pupil relationship is seen in the fields of bicycle repair, carpentry, electrical, furniture making, motorcycle repair, plumbing, welding, etc. There is no black and white agreement between apprentices and master craftsmen concerning salary and other benefits (ADB, 2015).

Non-formal

Training programs at the non-formal level are not accredited / affiliated by BTEB. Many public and private organizations come up with their own syllabuses and curriculum. They design their training programs based on the job market demand. Students are linked with their potential employers. The non-formal TVET is usually short skills training courses which last 1–12 months. Many students who want to go at home or abroad can enroll in 360-hour courses in Diploma institutes and TTCs. For example, a person having a minimum of grade 5 completions can complete a course on housekeeping within 21 days. Rural people who want to go abroad are attracted to the course, especially in the Middle East. The government needs to closely co-operate with private and non-formal sectors to provide continuous training for skills development. In this case, Bangladesh can draw lessons from Singapore whose economic success story is based on the training and development of its workforce.

National Policy, Women Participation and Challenges of TVET

The economy of Bangladesh grew steadily over the past decade. Simultaneously, Bangladesh also witness the progress in human development. The GDP growth rate remained consistent of more than 6 percent over the past decade, even though, Bangladesh encountered natural disaster, political instability, regional and global economic crisis etc. This economic growth is particularly attributed by the economic shifts of large agrarian economy towards service and industry. Meanwhile, Bangladesh has experienced the fastest decline in child and infant mortality rates among developing countries while it has already eliminated gender disparity in primary and secondary education enrolment. Concurrently, more women are joining the workforce since early child marriage system has been declined significantly in the recent

years. However, the women participation in the TVET programmes was not inspired in the past years.

The industry and service sectors in Bangladesh demand for more and higher skilled workers since the share of workforce employed in industry outpaced that in agriculture. As a result, more workforce is required who possess technical skills. It was projected that 15 million jobs to be created in the fast-growing economic sectors, including Ready-Made-Garments (RMG), export-oriented manufacturing, light engineering, ship building, agri-business, ICT and pharmaceuticals (World Bank, 2015b).

Recently, the government of Bangladesh (GoB) recognizes the contribution of female labour force participation in economic development and encouraged and invested in improving female participation in TVET (World Bank, 2017). The government of Bangladesh recognizes the significant contributions made by the increased female labour participation and encourages the female enrollment in TVET and tertiary education in the 7th five-year plan of the government. The government plans to increase the percentage of female enrolment in TVET from 27 percent in 2015 to 40 percent by 2020. However, the National Skills Development Policy (NSDP) 2011 recognizes the critical role of TVET in imparting skills training particularly to the under-representative groups including women for promoting economic growth and social development (World Bank, 2013).

The Role of Polytechnic in implementing TVET is increasingly important since it provides post-secondary level skill training. Every year many students drops out before completing higher education under the general education steam in Bangladesh, therefore, these students either enter low-skilled jobs or remains unemployed at home. In such circumstances, the polytechnic education system offers valuable opportunities at higher-level technical skills training and alternative pathways to higher education. Besides, the TVET system in Bangladesh is large and complex, comprising of different providers and training

modalities. There are two types of formal TVET is mainly offered. These are a four years of diploma level training through polytechnic and a 360 hours of training through short course institutes. The eligibility of both the training requires completion of grade 10 and grade 8 respectively.

Female participation in the skills trainings is a priority in the national policy and plans of Bangladesh. The National Skills Development Policy (NSDP) 2011 envisages increasing access to skills training for females and creating gender-friendly environment in training institutions. The national education policy of 2010 also recommends increasing the supply of training providers for females at districts and sub-districts levels. Specially, the National Strategy for Promotion of Gender Equality in TVET of 2012 targeted at increasing the females share in TVET programmes to 40 percent by 2020 and female employment by at least 30 percent. In connection with the previous policies, the current 7th Five-Year Plan (2016-2021) also reflected the need for bringing more skilled female workers to the labour market through improved access to quality training (World Bank, 2017). However, the government of Bangladesh is implementing Skills Training and Enhancement Project (STEP), in the TVET sector with the support of the world Bank and the government of Canada. The main objective of the project is to strengthen the selected private and public training institutions regarding their quality and employability of trainees including those disadvantaged socio-economic backgrounds. The project is being implemented in 93 institutions, including both private and public education providers.

On the contrary, expansion of TVET has not kept pace with secondary general education in terms of the number of institutions. If we compare the number of secondary level of general institutions are five times the number of all TVET institutions in Bangladesh (CAMPE, 2013). Moreover, many of the polytechnic institutions are situated in the urban location but more than 65 percent of the population lives in rural areas which is further

disadvantage for the outreach. In addition to this TVET is private polytechnics is relatively expensive which does not cater any incentive to participation of the students from socio-economically disadvantaged background. A CAMPE survey notes that there exists a gender differences in family spending on TVET across non-tuition expenses, such as transportation, accommodation, food etc. (CMPE, 2012). However, The Directorate of Technical Education (DTE) has been providing stipends to all female students across 93 public and private polytechnics under the world bank financed skills and training enhancement project.

CONCLUSION

During the British period, there were 22 technical institutions in the part of East Bengal until 1947. Another 45 institutions were established in the Pakistan period (1947-1971). The first two decades of independent Bangladesh did not show any encouraging picture of TVET development, as only 53 institutions were added between 1972 and 1990. The regimes led by BNP and Awami League between 1990 and 2000, established 265 institutions. After 2000, TVET received more attention than at any time before. Between 2001 and 2013, more than 1,200 TVET institutions were established.

There are formal, non-formal and informal TVET institutions in Bangladesh. The government, private sector, and non-government institutions are involved in the promotion of TVET. Under the Ministry of Education (MoE), BTEB and DTE are the main providers of TVET education. Another main provider of TVET is the Bureau of Manpower, Employment and Training (BMET) under the Ministry of Expatriate Welfare and Overseas Employment (MEWOE). However, private sectors contribute the lion's share in TVET development in the country as more than ninety per cent of institutions and about seventy-five per cent of the total enrollments are managed by them. In addition to formal TVET programs, non-formal

training caters to the needs of capacity building. Many public and private organizations have advanced their own syllabuses. They link their students with the prospective employers, so that they can get employment right after graduation

TVET has received good deal of attention in many countries like Germany, Japan, the United Kingdom, the United States of America, Korea, and Malaysia. Their systems may differ, but they do give due emphasis to the technical and vocational education. The study found that TVET has significantly contributed to the gradual transformation of agricultural economy to the advanced technology-based industrial economy. It is suggested that Bangladesh can take many lessons from these countries to upgrade the status of TVET into mainstream education and the relevance of TVET to the labor market.

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