ECONOMIC AND FINANCIAL ANALYSIS

A. Macroeconomic and Sector Context

1. The gross domestic product of Bangladesh grew at a steady rate of about 6% since FY2004 (6.3% in FY2012).[1] The poverty head count decreased from 57% in 1992 to 31% by 2010. Social indicators, especially for women, improved over the same period. The dependent population is projected to fall and the working population to rise over the next 30 years.

2. The labor force is growing at a rate of 3.2% per annum, and about 2 million additional workers are entering the market every year. More than two-thirds of informal workers have a primary education or less and only 4% of the labor force has any vocational training.[2] The lack of educated and trained workers strains productivity and inhibits economic growth and diversification. Providing appropriate training to workers can mitigate this problem.

3. **Skills training.** Public technical and vocational education and training (TVET) is provided by more than 20 ministries overall. Various private sector institutes, nongovernment organizations and other nonprofit institutions also provide skills training. The formal TVET system is not providing the skills development a modern economy needs. The government has initiated substantial reforms that aim to increase the scope of formal training and make it more relevant. These include different projects supported by several development partners including the Asian Development Bank (ADB).[3] The proposed ADB Skills for Employment Investment Program (SEIP) will finance skills training for 260,000 trainees under tranche 1, with a target of placing at least 70% of graduates in jobs. The entire program will train 1.25 million people in total. About 0.97 million will be trained by the private sector and 0.28 million by the public sector.

4. **Labor and employment pattern.** The economically active population in Bangladesh increased from 46.3 million in 2002 to 56.7 million in 2010. Total employment increased from 44.3 million to 54.1 million in the same period, and the labor force participation rate rose from 57.3% to 59.3%. During this time, the composition of the labor force changed significantly. The percentage of workers in agriculture declined from 51.7% to 47.3%, and the portion involved in nonagricultural work rose from 48.1% to 52.57%.

5. The SEIP aims to increase income by enhancing the skill base of the population, particularly working age people 15 years of age and older. The program intends to help increase (i) employment in the formal sector from 12.5% of the work force in 2010 to more than 20% of the total work force by 2025; (ii) exports to about double the 2012 value by 2025; (iii) remittances from $14 billion in 2012 to $25 billion by 2023; and (iv) the share of the workforce with TVET from 4% to 12% by 2021. Table 1 shows past funding and funding needs to 2023 for skills training. As the 2011 and 2012 figures show, this funding has been inadequate.

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[1] The fiscal year (FY) of the Government of Bangladesh ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY 2013 ends on 30 June 2014.

[2] Bangladesh Bureau of Statistics. *Report on Labour Force Survey 2010*. 2011. Dhaka.

[3] ADB. 2008. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the People's Republic of Bangladesh for the Skills Development Project.* Manila.

Table 1: Financing Needs for Skills Development
($ million)

Financing Needs	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Per NSAPR II	188.6	209.0	231.6	256.6	284.3	315.1	349.1	386.8	428.6	474.9	526.2	583.1	646.1
Per SFYP	180.3	202.1	226.6	254.0	284.7	319.2	357.8	401.1	449.6	504.1	565.0	633.4	710.1
With labor force growth)	517.5	535.6	554.6	574.5	595.4	617.3	640.3	664.4	689.8	716.5	744.5	7743.0	805.0

NSAPR = National Strategy for Accelerated Poverty Reduction, SFYP = sixth five year plan.
Sources: Bangladesh Labor Force Survey, 2010; National Strategy for Accelerated Poverty Reduction (FY2009-11); Government's Sixth Five Year Plan (FY2011-15); Asian Development Bank estimates.

B. Economic Rationale for Investing in Skills Development Sector

6. The Government of Bangladesh recognizes the vital role skills training plays in fostering long-term inclusive growth and reducing poverty and inequality. The country's National Education Policy 2010, the National Skills Development Policy 2011, and the Sixth Five Year Plan FY2011–15 emphasize the importance of the skills training system to helping Bangladesh improve its competitiveness.[4]

7. Expanding skills training for new labor market entrants and to improve the skills of existing workers is a key to creating efficient human capital in Bangladesh and promoting decent work opportunities. Many factors, including efficient financing mechanisms and management strategies, contribute to a successful skills training system. The financing mechanisms play a part in determining the degree of access to skills, the social inclusion of training, and therefore the employability of people from different income backgrounds, of different gender, and with different levels of education. For this reason, many countries have developed innovative mechanisms to finance their skills training systems, which is inclusive.

8. The 2010 labor force survey showed that in both urban and rural households, the highest unemployment rates occur among individuals with the equivalent of higher secondary school certificates and master's and engineering degrees. The unemployment rate for females is generally higher than that for males. Average monthly incomes have increased for both rural and urban households, but the improvements have been greater in rural areas.[5] As a result, urban–rural income disparity dropped from 218% in 1995–1996 to 171% in 2010. The absolute difference between urban and rural income levels has fluctuated, increasing from 1995 to 2000 and from 2005 to 2010, but falling from 2000 to 2005.

9. Bangladesh currently has an input-based system for financing skills training. The government provides funding to both public and private skills training institutions. Government-selected and -approved private institutions receive funding through monthly pay orders. This system has several weaknesses:

(i) **Inadequate financing.** The two major beneficiaries of skills training, students and enterprises, do not share any of the cost of public sector skills training in Bangladesh. The government has to bear the total costs and is unable to fund these institutions at the levels required to produce job ready graduates.

[4] Ministry of Education. *National Education Policy*. 2010. Dhaka; Ministry of Education. *National Skill Development Policy*. 2011. Dhaka; Government of Bangladesh, Planning Commission. *Sixth Five Year Plan, FY2011–FY2015.* 2011. Dhaka; Government of Bangladesh, Planning Commission.

[5] Bangladesh Bureau of Statistics. *Report of the Household Income & Expenditure Survey 2010*. 2011. Dhaka.

(ii) **Insufficient institutional operations funds.** About 88% of the budgets of technical training centers goes to salaries and other allowances for the teaching and non-teaching staff, leaving only 12% for all other operational expenditures.
(iii) **Inflexible institutional budgets.** Institutions are not permitted to transfer funds from one budget line to another. As a result, institutions cannot spend the unspent budget from one line to cover the deficit on another.
(iv) **Limited institutional discretion.** Complex procurement rules and procedures limit the discretion of the institutions. Institution principals have very little latitude in disbursement of funds and are thus slow to respond to market demand.
(v) **Weak links to the job market.** A 2006 World Bank study reports that 46.00% of skills training graduates in the country remain unemployed—50.50% from public TVET institutions and 45.29% from private ones.[6] Yet only 0.23% of workers in the manufacturing sector come from technical and vocational training institutions.
(vi) **Internal inefficiency.** The World Bank study reports that only 52.0% of the capacity of the vocational education system and 40.5% of the capacity of the vocational training institutes are being utilized.

C. Distribution Analysis

10. The SEIP will benefit trainees, trainers, training institutions, and companies hiring trainees. The high quality of skills and widely accepted certification acquired from the training will help the trainees obtain better jobs or higher earnings from self-employment. Training institutions will benefit from the increased quality and number of trainers and graduates to be supported under the SEIP. Steps taken to bolster the social standing of vocational education will enable training institutions to make more efficient use of their capacity by attracting more students. The program will help training institutions reduce current costs for in-house training, recruitment, and induction; expenses incurred due to inappropriate hiring; and high staff turnover by preparing job ready trainees. The trainers will acquire better pedagogical and technical skills. Trainers will learn how to train for and assess competency. The productivity of the companies hiring the individuals trained by the institutions will increase due to the trainees' enhanced skills. Additional exports of skilled labor and the resultant increase in foreign remittance inflows are additional projected SEIP benefits.

11. The government is rigorously redefining its TVET system and policies. It needs to look into the existing input-based funding mechanism, which has proved itself to be ineffective and impractical. Possible alternatives may be an output and/or performance-based contracting mechanism along with a voucher system, cost recovery, and cost sharing scheme.

D. Cost–Benefit and Sensitivity Analyses

12. The economic analysis for the SEIP tranche 1 was done by calculating economic net present value (ENPV) and economic internal rate of return (EIRR), and by conducting sensitivity analysis for both optimistic and pessimistic scenarios to see the impact of potential changes from the assumptions adopted on the ENPV and EIRR. The analysis made the following assumptions in estimating benefits:

(i) Training will be provided by public institutions, industry associations, Bangladesh Bank, and Palli-Karma Sahayak Foundation (PKSF). About 47,400 trainees will receive training through the public institutions. The assumed employment rate is 40%. About 212,600 trainees will receive training through eight associations, the

[6] World Bank. *The Bangladesh Vocational Education and Training System: An Assessment. 2006*. Washington, D.C.

Bangladesh Bank small and medium enterprise program, and PKSF, with an employment rate of 60% achieved. Training provided by the associations includes skill improvement. This will be more effective in terms of employment results than the training of new entrants because 45.6% of the trainees will already be employed in the concerned industries.

(ii) Of trainees who receive training in light engineering, 75% will be employed domestically and 25% will be employed abroad.

(iii) Of those trained in shipping, 40% will be employed in Bangladesh, and the remaining 60% will be employed abroad.

(iv) About 95% of the other graduates will be employed at home, and 5% abroad.

(v) Of the domestically employed graduates, 50% will receive permanent employment, 45% will receive temporary employment, and 5% will be self-employed.

(vi) The employment across different sectors will be in line with the current composition of the labor force and at the wages existing in each sector.[7]

(vii) The minimum wage for new entrants will be Tk4,500 for public institutions, Tk5,000 for associations, and Tk8,000 for Bangladesh Bank. The main benefit of the project will be the incremental wages earned by trainees due to their training.

(viii) Trainees remaining in Bangladesh may be employed permanently or temporarily or become self-employed. The increment in wages from training for trainees employed permanently and temporarily will be 50% and 25% for self-employed trainees. The increment for trainees employed abroad will be 53%.

13. A summary of the calculated employment rates and incremental salaries for trainees after training is in Table 2.

Table 2: Summary of Benefits

Type of Institution	Employment Rate (%)	Total Number of Trainees per institution	Monthly Salary Without Training for New Labor Market Entrants (Tk)	Monthly salary with training (for new entrants)	Monthly Salary for Existing Work Force Without New Skills Training (Tk)	Monthly Salary for Existing Work Force With New Skills Training (Tk)
Public institutions						
BMET		33,900	4,500	8,000		
DTE	40	10,800	4,500	8,000		
BITAC		2,700	4,500	8,000		
					Associations and Others	
Garment		68,000	5,000	7,000	10,000	12,000
Knitwear		52,000	5,000	7,000	10,000	12,000
Textile		15,900	5,000	10,000	8,000	12,000
Leather		21,000	5,000	10,000	20,000	24,000
Construction		13,000	5,000	10,000		
Light engineering	60	8,700	5,000	10,000	10,000	15,000
Information Technology		10,000	5,000	10,000	8,000	10,000
Shipping		4,000	5,000	10,000	10,000	15,000
Small Enterprise		10,000	8,000	15,000	8,000	10,000
PKSF		10,000	5,000	10,000		

BITAC = Bangladesh Institute of Technical Assistance Center, BMET = Bangladesh Bureau of Manpower, Employment and Training, DTE = Directorate of Technical Education, PKSF = Palli-Karma Sahayak Foundation, Tk = Bangladesh Taka.
Source: Asian Development Bank estimates.

[7] Assumptions are based on the 2010 labor force survey and ADB estimates.

14. **Assumptions for estimating costs.** Program economic costs are costs of the program's four outputs. Program costs include costs for equipment and materials, consumables, raw materials, spare parts, stipends for trainees, wages and salaries for full-time and part-time trainers, recruitment, and higher salaries paid to the trainees after training. Additional trainee costs include both opportunity costs and direct costs of participation in the training, and the training institutes have explicit and implicit costs in imparting the training that are not covered under the program. The trainers' costs include the opportunity cost of the training of trainers and foregone income. These costs, as well as their benefits, have been excluded from economic analysis because they are difficult to quantify and relatively small.

15. To derive the economic costs, program costs were classified into four categories: (i) imported material, (ii) other expenses, (iii) skilled domestic labor, and (iv) skilled foreign labor. The economic price of imported materials was considered to equal their financial price by using a conversion factor of 1. Other expenses have been converted to economic costs by using a standard conversion factor of 0.9.[8] Costs were adjusted by shadow wage rate factors of 0.82[9] for skilled domestic labor and 1 for skilled foreign labor to arrive at the economic opportunity cost. Industry taxes, duties and price contingency were excluded from the economic analysis.

16. While the financial cost of the program's tranche 1 is $138.5 million, the present costs after adjustment for distortions in market prices and exclusion of price contingencies stand at $108.36 million. To get the total economic costs, trainee and institute costs have been added. The trainee cost during the training is assumed to be Tk6,500 per trainee per month for the training period. This includes incremental accommodation, incremental transportation, and other incremental costs. The total economic cost of the program is $192.60 million.

17. The base case in the economic analysis assumed the following: a discount rate of 12%, an annual wage increase of 5%, and an average work period after graduation of 20 years.

18. Based on a 20-year period, the ENPV for the base case scenario was calculated to be $120.84 million, and the EIRR was estimated at 22.89%. The analysis also considered two other scenarios: a pessimistic case and an optimistic case, based on different assumptions. The assumptions under these scenarios and the derived ENPVs and EIRRs are shown in Table 3.

Table 3: Pessimistic Case, Base Case, and Optimistic Case

Item	Pessimistic Case	Base Case	Optimistic Case
Employment benefit attributed to training (%)	70	80	100
Minimum wage before training (public institutions) (Tk)	5,000	4,500	3,500
Minimum wage before training (associations) (Tk)	5,300	5,000	4,000
Salary of workers employed abroad over local salary (%)	100	125	150
ENPV ($ million)	41.63	120.84	240.47
EIRR (%)	15.93	22.89	31.15

EIRR = economic internal rate of return, ENPV = economic net present value, Tk = Bangladesh Taka
Source: Asian Development Bank estimates.

19. **Sensitivity analysis.** The sensitivity of the program ENPV and EIRR to three other scenarios was also considered: a 10% increase in costs, a 10% decrease in benefits, and the combined effect of a 10% increase in costs and a 10% decrease in benefits. The results are in Table 4. Sensitivity analyses were carried out on the base case by varying three program-

[8] A standard conversion factor of 0.9 was used the economic and financial analysis of the Padma Bridge Program (2012).

[9] A shadow wage rate factor of 0.82 has been used in the cost-–benefit analysis of the Buriganga River Restoration (2012).

related variables: (i) employment rates; (ii) trainee costs; and (iii) institute costs. The pessimistic employment case was a 12.5% decrease in the employment rate, and the optimistic case was a 16.67% increase in the rate. The pessimistic case increased trainee costs by 15%, and the optimistic case lowered them by the same amount. The costs incurred by training institutes were assumed to be 25% of the unit cost of training for public institutions. For industry associations, Bangladesh Bank, and PKSF, varying percentages of cost sharing were assumed. In addition, 10% implicit costs were assumed for these training institutions. For training institute costs, the pessimistic case assumed a 10% increase, and the optimistic case a 5% decrease. The highest ENPV ($171.13 million) and the highest EIRR (34.29 %) occur when assuming a 5% lower training institute cost. The lowest ENPV ($20.25million) and the lowest EIRR (13.19%) occur when assuming a 10% higher training institute cost.

Table 4: Net Present Value, Economic Internal Rate of Return, and Sensitivity Analysis

Scenarios	ENPV ($ million)	EIRR (%)
Base Case	120.84	22.89
10% increase in costs	105.37	20.72
10% decrease in benefits	93.28	20.50
10% increase in costs and 10% decrease in benefits	77.82	19.53
12.5% decrease in employment rate[10]	116.87	22.57
16.67% increase in employment rate[11]	126.12	23.31
15% higher trainee cost	112.61	21.70
15% lower trainee cost	129.06	24.20
10% higher training institute cost	20.25	13.19
5% lower training institute cost	171.13	34.29

EIRR = economic internal rate of return, ENPV = economic net present value.
Source: Asian Development Bank estimates.

E. Fiscal Affordability and Sustainability Analysis

20. Fiscal sustainability will depend on (i) the availability of resources; (ii) the priority assigned by the government to skills development; and (iii) at least a partial recovery of costs from trainees and employers. Since skills development is emerging as a major sector, the government will mobilize resources from at least four sources: (i) its own resources, to leverage other sources of funds; (ii) funds from development partners, by moving towards a sector-wide approach and establishing the National Human Resource Development Fund as a single funding window to scale up quality skills development; (iii) contributions from the private sector, initially through cost sharing and drawing on corporate social responsibility; and (iv) cost recovery, where feasible. The long-term sustainability of the SEIP will depend on whether raising the quality of skills training (i) leads to much higher labor market outcomes; (ii) increases the productivity of the labor force, leading to higher returns on business investment; and (iii) gradually increases wages, leading to more investments by individuals in skills training.

21. The share of allocations to technical education in the total education budget peaked at 2.7% in 2007–2008 but decreased to 1.5% in 2012–2013. This was inadequate to help fund the 251 public and 2,730 private TVET institutions. Public TVET institutions are financed by the government, which also finances private TVET institutions through its monthly pay orders scheme. As of August 2013, the government was paying a 100% salary subvention to selected private TVET providers.

[10] This is the pessimistic case. Among a range of switching values, 12.5% yields the lowest ENPV and EIRR.
[11] This is the optimistic case. Among a range of switching values, 16.67% yields the highest ENPV and EIRR.

22. **Per capita student cost.** In 2008, the cost per student for public polytechnic institutes was Tk23,625 and that for public technical schools and colleges was Tk24,345. These costs per student are 4–5 times the base costs per student for secondary schools.

23. **Budgetary system.** TVET institutions receive their resources through the Ministry of Education and other ministries and agencies and mobilize few resources from the production unit or through linkages with industry. The government development budget allocations for TVET were $12.10 million in 2008-2009, $14.07 million in 2009–2010, and $33.54 million in 2010–2011. These allocations constituted 8.3% (2008–2009), 6.79% (2009–2010), and 14.38% (2010–2011) of total development expenditure on the educational sector in these 3 years. TVET institutions also suffer from limited discretion in the use of these allocated funds, high costs per student, and poor cost recovery. Funding to TVET in Bangladesh is predominantly input-based and for salaries. This makes the budget inflexible and leave insufficient funds for operations.

24. **Financing gap.** In its National Strategy for Accelerated Poverty Reduction II (Revised) FY2009–11, the government stated its aim to increase the proportion of students in TVET from about 3% of secondary school enrollment in 2009 to 20% by 2020. For this goal to be reached, the number of TVET students needs to grow by 5.53% a year during 2010-2020. In its sixth five-year plan for FY2011–FY2015, the government set a goal of increasing enrollment in TVET from 6% of secondary education enrollment in 2011 to 25% by 2025. The average annual growth rate of students in TVET has to be 6.76% to attain this goal. The analysis has calculated the minimum financing gap for TVET by deducting the government's medium-term budgetary framework allocation from the estimated financing needs of the TVET sector based on these growth targets.[12] Table 5 shows that the average financing gap ranges from a minimum of $133.75 million in 2015 to a maximum of $325.69 million in 2018.

25. Another way to calculate the financial gap is by using the annual compounded increase in labor force of 2.15% based on the projected labor force growth.[13] By using the incremental annual growth in labor force and increasing the 500,000 trainees who are already receiving training annually by the same 2.15%, and multiplying that with total cost per trainee, required projected annual financing gap has been calculated. The government's medium-term budgetary framework allocation for the skills sector has then been subtracted to arrive at the financing gap for 2012–2018, which ranges from $444.63 million in 2015 to $596.18 million in 2018.

Table 5: Financing Gap[a]

($ million)

Item	2012	2013	2014	2015	2016	2017	2018
No. of students (NSAPR II)	559,200.0	590,111.0	622,731.0	657,153.0	693,478.0	731,812.0	772,264.0
Financing needs (NSAPR II)	209.0	231.6	256.6	284.3	315.1	349.1	386.8
MTBF allocation	52.5	74.2	92.1	150.8	61.9	72.7	68.3
Financing gap (NSAPR II)	156.5	157.3	164.5	133.5	253.2	276.4	318.5
No. of students (SFYP)	540,808.0	577,375.0	616,416.0	658,096.0	702,594.0	750,101.0	800,820.0
Financing needs (SFYP)	202.1	226.6	254.0	284.7	319.2	357.8	401.1
Financing gap (SFYP)	149.6	152.3	161.9	133.9	257.3	285.1	332.8
Average financing gap	153.1	154.8	163.2	133.7	255.3	280.7	325.7
No. of students (SFYP + increments in labor force)	1,785,474.0	1,848,789.0	1,915,152.0	1,984,742.0	2,057,750.0	2,134,379.0	2,214,847.0
Financing needs (including labor force growth)	535.6	554.6	574.5	595.4	617.3	640.3	664.4

[12] Financing needs have been calculated based on the number of students, the average cost per student, and an inflation rate of 5%.

[13] The labor force is expected to increase from 56.7 million in 2010 to 78.0 million in 2025.

Item	2012	2013	2014	2015	2016	2017	2018
Financing gap (including labor force growth)	483.1	480.4	482.4	444.6	555.5	567.6	596.2

MTBF = medium-term budgetary framework, No. = number, NSAPR = National Strategy for Accelerated Poverty Reduction, SFYP = sixth five-year plan.

[a] Based on data from National Strategy for Accelerated Poverty Reduction Strategy II (revised) and Sixth Five Year Plan and after considering labor force growth

Sources: Ministry of Finance, MTBF, Asian Development Bank estimates.

26. **Financial Sustainability:** The present system of financing skills training institutions is responsible in part for the poor performance of the institutions. This analysis provides short-term, medium-term, and long-term proposals for financial sustainability in the sector. For the **short-term**, the following actions are proposed:

(i) **Flexibility in the use of budget funds.** An inability to transfer unspent funds from one budget line to another limits the ability of skills training institutions to utilize available budget efficiently. Unspent amounts are returned to the ministry, even though these could have addressed a deficit on another line. Removal of this rule is recommended.

(ii) **Fund-raising activities.** Insufficient funds, especially for operations, is prevalent in training institutes. To remedy this, institutions should be allowed to conduct local fund raising. Managers should have some degree of freedom on how funds mobilized this way are used. Such schemes would need to be transparent and require clear procedural guidelines.

(iii) **Freedom to recruit.** Managers need to have freedom in the hiring of new instructors. The existing process is lengthy, and vacancy rates average more than 50%. This limits the institution's ability to react to market needs. A portion of total funding to institutions should be made available to recruit instructors locally to match the emerging labor market needs.

27. For the **medium-term**, the following actions are proposed:

(i) **Performance-oriented financing mechanism.** Additional funds can be made available to high-performing institutions. However, a proper monitoring framework is critical to minimize student turnover and duplication in training.

(ii) **Cost recovery.** Most of the students in the public skills training system enjoy unreasonably low fees (as low as Tk20 per month). A more appropriate fee structure should be implemented, and institutions should be allowed to retain a certain portion of the increased earnings.

(iii) **Cost-sharing schemes.** Under this system, a trainee accepts a lower salary than what he or she would otherwise earn to access formal training. This cost can be shared between the employer and government-funded skills training institutions.

28. **For the long-term the following actions are proposed**:

(i) **Vouchers.** A voucher system directs subsidies to a particular target group, enabling them to purchase specific services. Vouchers act as a subsidy and grant limited purchasing power to trainees so that they can choose and purchase their own training. It is crucial to ensure transparency and provision of relevant information for the voucher system to function effectively in Bangladesh.

(ii) **Growth fund.** Institutions operating at full capacity and maintaining acceptable levels of performance can be provided with additional funds to facilitate growth and expansion. This would enable them to expand and keep up their performance levels at the same time.