ADB

Technical Assistance Report

Project Number: 54108-001
Transaction Technical Assistance Facility (F-TRTA)
April 2020

People's Republic of Bangladesh: Sustainable and Resilient Energy Sector Facility in Bangladesh

Asian Development Bank

CURRENCY EQUIVALENTS
(as of 6 April 2020)

Currency unit	–	taka (Tk)
Tk1.00	=	$0.0118
$1.00	=	Tk84.9100

ABBREVIATIONS

ADB	–	Asian Development Bank
EECMP	–	Energy Efficiency and Conservation Master Plan
GDP	–	gross domestic product
GIZ	–	Gesellshaft für Internationale Zusammenarbeit
GPDIP	–	Green Power Development Investment Project
kWh	–	kilowatt-hour
LNG	–	liquified natural gas
MW	–	megawatt
SAEN	–	South Asia Energy Division
SRPSP	–	Sustainable and Reliable Power Supply Project
SUEECP	–	Scaling Up Energy Efficiency and Conservation Project
TA	–	transaction technical assistance
TASF	–	Technical Assistance Special Fund

NOTES

(i) The fiscal year (FY) of the Government of Bangladesh and its agencies ends on 30 June. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2019 ends on 30 June 2019.

(ii) In this report, "$" refers to United States dollars.

Vice-President	Shixin Chen, Operations 1
Officer-in-Charge	Diwesh Sharan, South Asia Department (SARD)
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TRANSACTION TECHNICAL ASSISTANCE AT A GLANCE

1. Basic Data

Project Number: 54108-001

Project Name	Sustainable and Resilient Energy Sector Facility in Bangladesh	**Department/Division**	SARD/SAEN
Nature of Activity	Project Preparation, Capacity Development, Policy Advice	**Executing Agency**	Ministry of Power, Energy and Mineral Resources
Modality	Facility		
Country	Bangladesh		

2. Sector

	Sector	Subsector(s)	ADB Financing ($ million)
✓	Energy	Electricity transmission and distribution	0.10
		Energy efficiency and conservation	0.10
		Energy sector development and institutional reform	0.10
		Renewable energy generation - biomass and waste	0.10
		Renewable energy generation - solar	0.10
		Renewable energy generation - wind	0.10
	Finance	Infrastructure finance and investment funds	0.10
		Small and medium enterprise finance and leasing	0.10
	Industry and trade	Large and medium industries	0.10
		Small and medium enterprise development	0.10
		Total	**1.00**

3. Operational Priorities

- ✓ Addressing remaining poverty and reducing inequalities
- ✓ Accelerating progress in gender equality
- ✓ Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability
- ✓ Making cities more livable
- ✓ Strengthening governance and institutional capacity

Climate Change Information

Climate Change impact on the Project: Low

Sustainable Development Goals

SDG 1.2, 1.5, 1.b
SDG 5.2, 5.b, 5.c
SDG 7.1, 7.2, 7.3, 7.a
SDG 8.10, 8.2, 8.4
SDG 9.1, 9.2, 9.3, 9.4
SDG 10.2
SDG 12.2, 12.7

Gender Equity and Mainstreaming

Effective gender mainstreaming (EGM) ✓

Poverty Targeting

General Intervention on Poverty ✓

4. Risk Categorization

Complex

5. Safeguard Categorization

Safeguard Policy Statement does not apply

6. Financing

Modality and Sources	Amount ($ million)
ADB	**1.00**
Transaction technical assistance: Technical Assistance Special Fund	1.00
Cofinancing	**0.00**
None	0.00
Counterpart	**0.00**
None	0.00
Total	**1.00**

Currency of ADB Financing: US Dollar

I. THE TECHNICAL ASSISTANCE FACILITY

A. Justification

1. The Proposal

1. The proposed transaction technical assistance (TA) facility will support the Government of Bangladesh during 2020–2022 to improve performance of the country's energy sector through technical, policy and capacity development support for investment projects in power and gas sectors.[1] During this period, Asian Development Bank's (ADB) energy portfolio in Bangladesh is expected to increase by $1.7 billion, equivalent to the current ADB portfolio developed during 2015-2020.[2]

2. The TA facility will combine the preparation of various projects in Bangladesh during 2020-2022. Such an approach is expected to result in a better-performing energy portfolio in Bangladesh than would be achieved through project-specific TA because of improved (i) response time by providing the country with consistent energy solutions; (ii) quality of outputs through efficient delivery systems; (iii) sector assessment and policy support; and (iv) knowledge sharing across sub-sectors. These improvements, including administrative efficiency, will be achieved through the use of a common pool of high-quality consultants as due diligence requirements are similar across energy sector projects.

3. The TA facility is in line with the recommendations of the ADB's policy paper to enhance operational efficiency,[3] and will increase (i) optimization of ADB resource use by effectively prioritizing TA resource allocation and improving project design quality; (ii) project implementation effectiveness by reducing delays in project implementation, promoting cost-efficient procurement of services, and optimizing the value addition of consultant services; and (iii) administrative cost-effectiveness.

2. Sector Constraints and Opportunities

4. Bangladesh has achieved consistent and steady economic growth, with real gross domestic product (GDP) estimated at 7.1% in fiscal year (FY) 2016, 7.3% in FY2017, and 7.8% in FY2018. The government aims to accelerate the growth to 8.0%, on average, between now and 2021. The structure of the Bangladesh economy is gradually shifting from agriculture to manufacturing and services. The industrial growth rate is also expected to increase to 10.9% from 9.6% during the same period. Availability of adequate and affordable energy is a major impediment in achieving the country's growth and development objectives.

5. **Power.** The power sector in Bangladesh is characterized by recurring shortages of electricity generating capacity in the face of ever-rising demand in a growing economy. In FY2015, per capita electricity consumption was 310 kilowatt-hours (kWh); this was lower than most of the other countries in South Asia, indicating that power sector infrastructure facilities in Bangladesh require significant capacity additions.[4] In tandem with increasing power generation capacity,

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[1] A list of ensuing projects supported by the TA facility is detailed in Appendix 2. The ensuing projects and respective preparatory TAs are listed in Bangladesh's Country Operations Business Plan, 2020–2022.

[2] See footnote 1 and ADB Data Library https://data.adb.org/dataset/adb-sovereign-projects (accessed 23 February 2020.

[3] ADB. 2015. *Enhancing Operational Efficiency of the Asian Development Bank*. Manila.

[4] Annual per capita consumption levels reported in 2015 by other countries in the region were as follows: Bhutan 3,039 kWh, India 800 kWh, Maldives 558 kWh, Sri Lanka 530 kWh, and Nepal 140 kWh.

investments in the transmission and distribution networks are crucial to address bottlenecks for the evacuation of bulk power from power stations to major load centers and further uninterrupted delivery to end users.

6. To this end, the government, following its Power System Master Plan 2016,[5] has developed series of investment projects to expand national power transmission network as well as increase capacity of its power distribution systems. Sustainable and Reliable Power Supply Project (SRPSP) proposed by the government is part of this investment plan to address constraints in power transmission and distribution sector, and ADB was requested to provide $550 million to finance the project.

7. **Renewable Energy.** Bangladesh's renewable energy potential is estimated at 3,666 megawatt (MW).[6] The country has been slow in developing renewable energy, despite its Renewable Energy Policy's,[7] and Vision 2021's plan to generate up to 10% of its power from renewable energy by 2021.[8] Land acquisition has been a major hurdle in developing utility scale solar photovoltaic power plants, as existing land policy restricts the use of agricultural land for large solar power plants. The government has encouraged private sector participation in renewable energy development through competitive bidding and unsolicited proposals. However, only a few of the proposed projects have advanced due to land constraints and inability to reach financial closure.

8. The government is committed to meeting its Nationally Determined Contributions under the Paris Climate Accord, which includes reducing greenhouse gas emissions by 5% by 2030 from the business-as-usual case. To meet this target, installation of up to 1,000 MW of renewable energy generation capacities is planned for medium-term development. However, given land constraints and the government's policy to retain as much land as possible for agriculture, utility scale solar photovoltaic power plants can be constructed only on marginal land, which poses big challenges for future scaling up. Floating solar photovoltaic power systems are ideal solution for Bangladesh as they do not compete with agricultural land, do not suffer from efficiency penalties caused by high ambient temperatures, and can be quickly deployed and built in stages. Bangladesh has large water reservoirs, but the potential of floating solar photovoltaic power has not yet been fully explored.

9. Through its ongoing TA, ADB, together with the government, is assessing floating solar photovoltaic power potential, developing an investment plan covering solar, wind, biomass, and other renewable energy resources that complements both the government's climate change commitments and energy sector interventions by ADB.[9] Currently, the TA has identified and shortlisted several locations favorable for floating solar systems, wind, small hydro and biomass energy generation. The government is planning to conceptualize these projects and initially seeks

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[5] Government of Bangladesh, Ministry of Power, Energy and Mineral Resources. 2016. *Power System Master Plan 2016*. Dhaka.

[6] Including (i) 2,680 MW from solar energy, (ii) 637 MW from wind, (iii) 275 MW from biomass, (iv) 60 MW from small hydro, (v) 10 MW from biogas, (vi) 3 MW from mini and micro grids, and (vii) 1 MW from waste to energy according to Power System Master Plan (footnote 4).

[7] Government of Bangladesh, Ministry of Power, Energy and Mineral Resources. 2016. *Renewable Energy Policy of Bangladesh*. Dhaka.

[8] Government of Bangladesh, Ministry of Planning, Planning Commission. 2012. *Perspective Plan of Bangladesh, 2010–2021: Making Vision 2021 a Reality*. Dhaka.

[9] ADB. 2018. *Knowledge and Support Technical Assistance to the People's Republic of Bangladesh: Capacity Development for Renewable Energy Investment Programming and Implementation*. Manila (KSTA 9628-BAN).

ADB's assistance to finance Green Power Development Investment Project (GPDIP) which will substantially increase renewable energy generation in Bangladesh's overall energy mix.

10. **Energy efficiency**. Bangladesh is one of the most energy-intensive countries in South Asia. The final energy consumption tripled over the past decade. Industrial growth has been one of the key drivers of Bangladesh's increasing energy intensity, accounting for 47% or almost half of the final energy use. Considering the development scenario, Bangladesh's emissions are expected to increase dramatically by 2030. The government recognized the importance of green growth and passed the Energy Efficiency and Conservation Master Plan up to 2030 (EECMP), which aims to restructure and improve economic institutions toward more efficient use of natural resources and improved competitiveness of the economy, which will be achieved through increased investments in technological innovation, natural capital, and economic instruments. This will contribute to responding to climate change, reducing poverty, and addressing sustainable economic development challenges. One of the important strategic objectives is to reduce primary energy consumption per GDP (energy intensity) by 15% by 2021 and 20% by 2030 compared to the 2013 level.

11. Several development partners including ADB, Japan International Cooperation Agency, and Deutsche Gesellshaft für Internationale Zusammenarbeit (GIZ) have supported implementation of the core actions of EECMP. In December 2016, ADB approved a regional TA for improving institutional capacity in preparing energy efficiency investments in five countries in South Asia including Bangladesh aiming to develop energy efficiency investment pipelines for the next 5 years.[10] A study conducted under this TA revealed that large energy efficiency opportunities exist in the Bangladesh textile, garment, cement, iron and steel manufacturing industries as well as in buildings. The total energy efficiency investment potential in selected solutions over the next 5 years in Bangladesh is estimated at $2.25 billion, focused almost wholly on the industry and building sectors.

12. Energy efficiency and conservation are crucial in Bangladesh to (i) help the country in addressing the multiple challenges facing the energy sector; (ii) improve energy intensity in the economy by effectively curtailing energy demand growth; (iii) make electricity available universally; and (iv) meet its climate change goals. To address the issues, the government requested ADB to provide a credit line that would facilitate investment in energy efficiency solutions with preferential terms that will stimulate energy efficiency and conservation investments under item (iv) of the EECMP as well as a technical assistance loan to implement the remaining core actions identified in the EECMP. ADB aims to provide such credit line under the Scaling Up Energy Efficiency and Conservation Project (SUEECP) which is expected to be approved in 2020.

3. Delivering Solutions and Facility Outcomes

13. The TA facility is aligned with the ADB Strategy 2030's operational priorities and will support the delivery of solutions for (i) tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability; (ii) making cities more livable; (iii) strengthening governance and institutional capacity; (iv) fostering regional cooperation and integration; and (v) accelerating progress in gender equality.

14. The TA facility will deliver energy sector solutions by improving (i) the energy systems planning process (by developing holistic plans in a participatory and inclusive manner); (ii) the

[10] ADB. 2016. *Regional Capacity Development Technical Assistance: Improving Institutional Capacity on Preparing Energy Efficiency Investments*. Manila. (TA-9266-REG).

quality of energy sector service delivery (through efficient and climate change resilient project design and management to expand infrastructure and introduce good operation and maintenance practices); (iii) institutional effectiveness in line ministries and utilities (by ensuring sustainability through good governance and improved credit worthiness); and (iv) the enabling environment for energy sector services (by improving the policy, legal, and regulatory setting).

15. The TA facility will combine activities that will help develop the portfolio of the South Asia Energy Division (SAEN) during 2020–2022, and thereby help catalyze and mobilize resources needed for development; strengthen ADB's knowledge services and support to Bangladesh; and improve ADB's response to client needs with respect to project design, administration, and knowledge management.

B. Outputs and Activities

16. Initially, the TA facility will support preparation and implementation of three ensuing projects: (i) Scaling Up Energy Efficiency and Conservation Project; (ii) Sustainable and Reliable Power Supply Project; and (iii) Green Power Development Investment Project. The TA facility will be further expanded to support preparation of other projects within the overall scope of this TA facility.

17. **Output 1: Improved planning, project design, and readiness.** The TA facility will be provided for planning and design of ensuing projects to ensure they are procurement ready. Holistic, inclusive, climate-resilient, and participatory planning approaches will be considered where appropriate in prioritizing project and/or programs for ADB financing. Detailed activities will include, when required: (i) feasibility studies and/or preliminary engineering designs for the ensuing investment;[11] (ii) economic analysis; (iii) financial management assessment, financial evaluation and financial analysis; (iv) strategic procurement planning including procurement risk assessment; (v) gender analysis, collection of sex-disaggregated baseline data, and gender action plans; (vi) risk assessment and management plans; (vii) safeguards documents addressing risks and impacts on the environment, involuntary resettlement, and indigenous peoples; (viii) climate risks and vulnerability assessments; (ix) sector assessments; and (x) information, communication, and technology systems. The TA facility will also explore options to apply advanced or high-level technology in project design by adapting such technology to local conditions, with awareness of the local contracting market.

18. **Output 2: Improved institutional capacity in project administration and energy sector service delivery.** As part of policy and regulatory support, this output will identify and assess potential reforms for (i) improving the effectiveness and efficiency of ministerial oversight of state-owned enterprises; and (ii) improving the uptake of energy-efficient technologies. To improve credit worthiness, analyses of the fiscal efficiency and sustainability of public utilities will be carried out to identify possible operational reforms that could be incorporated into future programs or projects. Counterpart staff capacity building will include (i) peer-to-peer arrangements for energy sector service delivery; (ii) project administration oversight; and (iii) support in establishing design standards, policy, and regulatory frameworks. Assistance will be provided in specific fields of expertise, including (i) technical expertise in advanced technology in core energy sector services (reliable power and gas supply; digitalization of energy systems; energy efficiency and audit; safety management, and energy systems planning and development); (ii) procurement and

[11] The TA will not provide financing for detailed engineering designs of ensuing projects.

contract management (resolving bid evaluation and contractual disputes); and (iii) social and environmental safeguard monitoring (resolving noncompliance issues).

19. **Output 3: Improved knowledge management and sharing among sub-sectors.** The TA facility will support knowledge management and sharing through the organization of training, workshops, and conferences at the country level, enhancing knowledge and lesson sharing among concerned line ministry, sector utilities and regulators. The TA facility will also support, when required, the development of knowledge solutions linked to the ensuing projects and will work in close collaboration with ADB's energy sector group to collect and disseminate appropriate lessons. To the extent possible, the TA facility will also support peer-to-peer learning through twinning arrangements between organizations in Bangladesh involved in the ensuing projects and their counterparts in developed countries. All these activities are directly linked to smooth processing of ensuing projects and their implementation through knowledge sharing among the projects and the stakeholders.

C. Cost and Financing

20. The TA facility is estimated to cost $1,025,000, of which $1,000,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-6). The key expenditure items are listed in Appendix 1.

21. The TA facility scope is expected to be expanded to cover other additional activities, consistent with the TA facility's outputs, and the facility will be replenished from time to time as funds are required and identified. The government will provide counterpart support in the form of data acquisition, counterpart staff, and other in-kind contributions. The government was informed that approval of the TA does not commit ADB to finance any ensuing project.

D. Implementation Arrangements

22. ADB will administer the TA facility and will be responsible for the selection, supervision and evaluation of consultants.

23. Output 1 activities for the ensuing projects will commence only after ADB approves the respective project concept papers. Output 2 activities to assist Bangladesh in project management and Output 3 activities involving knowledge management and sharing shall also commence once ADB approves the project concept papers of the respective ensuing projects. The TA facility will be implemented over 44 months and is expected to commence in May 2020.

24. The TA facility will recruit a team of individual consultants to assist in achieving the outputs. Selected, core individual consultants will be based at ADB headquarters to ensure integration of consultant activities into SAEN's workplan. Offices at project locations will be established when required, either at Bangladesh counterpart premises, ADB's Bangladesh resident mission, or rental offices, depending on location and availability.

25. The implementation arrangements are summarized in Table 1.

Table 1: Implementation Arrangements

Aspects	Arrangements
Indicative implementation period	May 2020–December 2023
Executing agency	Ministry of Power, Energy and Mineral Resources

Aspects	Arrangements		
Implementing agency	(i) Sustainable and Renewable Energy Development Authority; (ii) Power Grid Company of Bangladesh; (iii) Dhaka Electric Supply Company; and (iv) Bangladesh Power Development Board.		
Consultants	To be selected and engaged by ADB		
	ICS	International expertise: (43 person-months)	$0.59 million
	ICS	National expertise: (30 person-months)	$0.16 million
Advance contracting	Individual consultants will be recruited through advance contracting following ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations (2017, as amended from time to time) and its associated staff instructions and/or project administration instructions.		
Disbursement	The TA resources will be disbursed following ADB's *Technical Assistance Disbursement Handbook* (2010, as amended from time to time).		

ADB = Asian Development Bank, ICS = individual consultant selection, TA = technical assistance.
Source: Asian Development Bank

26. **Consulting services.** ADB will engage the consultants following the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations (2017, as amended from time to time) and its associated staff instructions and/or project administration instructions.[12] Survey and other support services will be carried out by the consultant following the ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations (2017, as amended from time to time) and its associated staff instructions and/or project administration instructions.

27. Multidisciplinary team of individual consultants will be recruited to carry out activities identified under the TA facility and approximately 43 person-months of international consultants' input and 30 person-months of national consultants' input will be required. The expertise of the consultants will cover the entire range required to conduct necessary due diligence for the ensuing projects. The recruitment will follow ADB's individual consultant selection process and will use time-based and/or output-based partial lump-sum contracts. Consultants will be deployed based on the requirements of each ensuing project (footnote1). Individual consultant selection rather than firm selection is considered appropriate, because the TA facility involves multiple activities that are not necessarily interdependent and will require a varied range of consultants' expertise and services. Since the 2021 and 2022 investment projects have not yet been fully conceptualized, the engagement of individual consultants offers the necessary flexibility in preparing those projects. To prepare a series of investment projects as planned to be supported by this TA facility, important synergies may be reaped from engaging the same consultants for a standard set of due diligence.

E. Governance

28. ADB will administer the TA facility, and thus the financial management, procurement, and integrity risks during implementation are assessed to be low. However, the TA facility will conduct thorough risk assessments of governance subjects for ensuing investment projects.

[12] Terms of Reference for Consultants (accessible from the list of linked documents in Appendix 3).

II. THE PRESIDENT'S DECISION

29. The President, acting under the authority delegated by the Board, has approved the provision of technical assistance not exceeding the equivalent of $1,000,000 on a grant basis to the People's Republic of Bangladesh for Sustainable and Resilient Energy Sector Facility in Bangladesh, and hereby reports this action to the Board.

COST ESTIMATES AND FINANCING PLAN
($)

Item	Amount
A. Asian Development Bank[a]	
1. Consultants	
a. Remuneration and per diem	
i. International consultants	599,920
ii. National consultants	165,820
b. Out-of-pocket expenditures	
i. International and local travel	104,300
ii. Surveys	18,000
iii. Training, seminars, and conferences	50,000
iv. Reports and communications	5,000
v. Miscellaneous administration and support costs[b]	2,400
2. Contingencies	54,560
Total	**1,000,000**

The technical assistance (TA) is estimated to cost $1,025,000, of which contributions from the Asian Development Bank are presented in the table. The government will provide counterpart support in the form of counterpart staff, office accommodation, communication facilities, provision of available relevant government data and studies, and other in-kind contributions. The value of the government contribution is estimated to account for 2.5% of the total TA cost.

[a] Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF 6).

[b] Visa, transportation to/from airport, and other cost related to travel.

Source: Asian Development Bank estimates.

PROJECTS UNDER TECHNICAL ASSISTANCE FACILITY

Table A2.1 Indicative Consultants' Input Allocation (person-months)

Item	Total	SUEECP 2020 Low Risk	SRPSP 2021 Complex	GPDIP 2022 Low Risk
A. International				
Senior Energy Advisor/Team Leader	6.0	2.0	2.0	2.0
Energy Efficiency Specialist	2.0	2.0		
Power Systems Engineer	3.0		3.0	
Renewable Energy Specialist	3.0			3.0
Financial Management Specialist	4.0	1.0	2.0	1.0
Energy Economist	3.0	1.0	1.0	1.0
Climate Change Specialist	4.0	1.0	2.0	1.0
Environmental Specialist	6.0	1.0	3.0	2.0
Social Development and Gender Specialist	6.0	1.0	3.0	2.0
Procurement Specialist	6.0	1.0	3.0	2.0
Subtotal A	**43.0**	**10.0**	**19.0**	**14.0**
B. National				
Energy Efficiency Expert	3.0	3.0		
Power Systems Engineer	3.0		2.0	1.0
Environmental Specialist	6.0	1.0	3.0	2.0
Social Development and Gender Specialist	6.0	1.0	3.0	2.0
Procurement Specialist	6.0	1.0	3.0	2.0
Research Associates	6.0	2.0	3.0	1.0
Subtotal B	**30.0**	**8.0**	**14.0**	**8.0**
Total (A+B)	**73.0**	**18.0**	**33.0**	**22.0**

GPDIP = Green Power Development Investment Project, SRPSP = Sustainable and Reliable Power Supply Project, SUEECP = Scaling Up Energy Efficiency and Conservation Project.
Source: Asian Development Bank

Table A2.2: Indicative Technical Assistance Budget Allocation

($)

Item Indicative risk category	**Total**	**SUEECP** low risk	**SRPSP** complex	**GPDIP** low risk
Training, seminars, and conferences	50,000	25,000	10,000	15,000
Surveys	18,000	2,000	12,000	4,000

GPDIP = Green Power Development Investment Project, SRPSP = Sustainable and Reliable Power Supply Project, SUEECP = Scaling Up Energy Efficiency and Conservation Project.
Source: Asian Development Bank

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/LinkedDocs/?id=54108-001-TAReport

1. Terms of Reference for Consultants