

Environmental and Social Review

BANGLADESH: DISTRIBUTION SYSTEM UPGRADE AND EXPANSION PROJECT

Component 1:

Bangladesh Rural Electrification Board Provision of 2.5 Million Service Connections to Rural Consumers

April 2016

Prepared by the Rural Electrification Board for the Asian Infrastructure Investment Bank

I. Introduction

Background

1. Electricity demand is increasing throughout Bangladesh, and consistent with this higher demand of power, new power plants need to be installed. As part of the national objective to provide universal electricity access by year 2021, new generation capacity must be complemented by upgrading the electricity grid with sufficient transmission and distribution system capacity, as well as establishing connections for new consumers. The Government of Bangladesh (GoB) has requested the Asian Infrastructure Investment Bank (AIIB) to consider providing financial support for infrastructure development including energy sector investments.

2. The project proposed for AIIB support, in the form of the Bangladesh Distribution System Upgrade and Expansion Project, comprises two components:

Component 1: Provision of 2.5 million service connections to rural consumers.

The Bangladesh Rural Electrification Board (BREB) will procure and install 65,000 small low-voltage (6.35/0.24 kV) transformers, 75,000 km of service drops and 2.5 million electric meters and supply to 77 Pally Bidyut Samities (PBSs, or rural electric cooperatives) in Bangladesh.

Component 2: Upgradation of grid substations and conversion of overhead distribution lines.

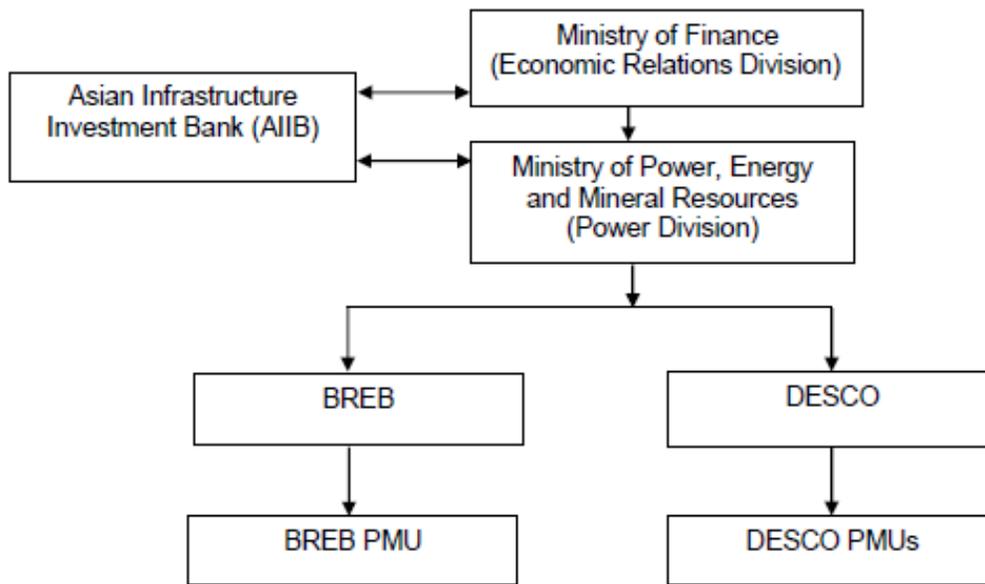
The Dhaka Electric Supply Company Ltd. (DESCO) will (i) replace the small inefficient 50/75 Megavolt-ampere (MVA) transformers and air-insulated switchgear systems at Bashundhara and Uttara grid substations with larger efficient 80/120 MVA transformers and gas-insulated switchgear systems; and (ii) install around 85 circuit-km of existing 33 kV overhead lines into underground cables.

3. The project investment plan is presented in Table 1.1. The project management structure is presented in Figure 1.1.

Table 1.1: Project Investment Plan (\$ million)

Item	Amount
A. Base Cost	
Component 1: Provision of 2.5 million Service connections	148.50
Component 2: Upgrade of grid substations and construction of underground lines	98.31
Subtotal (A)	246.81
B. Contingencies	8.06
C. Financing Charges During Implementation	7.42
Total (A+B+C)	262.29

Figure 1.1: Project Management Structure



4. In accordance with GoB requirements, project owners are required to obtain environmental clearances from the Department of Environment (DoE). DESCO is seeking the necessary clearances from DoE independently of BREB. This Environmental and Social Review applies only to the BREB Component (hereafter referred to as “the BREB Project”).

II. Component 1 – “BREB Project”

5. The BREB has been responsible for planning, financing, and construction of the rural electricity network in the country since 1978. Once constructed, the rural distribution facilities are transferred to the Pally Bidyut Samities (PBSs, or rural electric cooperatives), which are responsible for retail service provision and operation and maintenance (O&M) of the rural systems in their designated service areas. The performance of PBSs is overseen by their own boards consisting of consumer representatives and also BREB through performance target agreements. With the support of international development partners, BREB has recently conducted some capacity-strengthening reforms, such as appointing professionals to its Board and top management, delegating more authority to the PBSs, and establishing regional offices to better interface with the PBSs. These reforms helped BREB obtain the ISO 9001:2008 certification of quality management in 2013.

6. BREB’s rural electrification programs have generated large-scale positive effects on economic development and improvement of standards of living in rural areas. Currently around 50% of power demand in the country comes from the rural electric system, and electricity sales in rural areas have been growing at a rate of 11.7% over the last decade. As of 2015 BREB/PBSs owns and operates 286,438 km of distribution lines, 695 substations, and serves approximately 13.2 million consumers. However, as rural areas are in most cases

disadvantaged in power supply, even those households with access to electricity often experience supply disruptions. To realize its target to provide electricity for all by 2021, the Government has decided to accelerate the pace of its electrification program. BREB has been actively working with international development partners, and implemented a few rural electrification projects, similar to the proposed one, in the last several years.¹

III. Project Description

7. Despite its great success in rural electrification, Bangladesh still has about 13 million rural households without access to electricity, and its rural electrification rate is only about 40%. BREB has conducted feasibility assessment and forecasting to determine demand for new electricity connections for the establishment of new households, schools, small and micro-enterprises, etc. in the various PBSs, and evaluated the possibility of providing connections (“service drops”) by installing new transformers only on existing 11 kV distribution lines. The project will upgrade 65,000 small low-voltage transformers and install about 75,000 km of service drops and 2.5 million electric meters in rural areas, where distribution lines have already been constructed.

8. The objective of the project is to boost economic development and poverty reduction in rural areas, by providing affordable and reliable electricity. In order to achieve this objective, the project is to provide service connections to new consumers in rural areas which are covered by existing distribution system in Bangladesh. Upon completion of the project, 2.5 million of new consumers of different categories will be connected. Income generated through connecting new consumers will help improve the financial soundness of all PBSs under the project.

9. It is also expected that the project will contribute greatly to the rural development in Bangladesh, as well as national economy, through increased productivity in agriculture and light industries, expansion of business and service delivery, and creation of additional employment opportunities. Therefore, the project will have a significant and sustained impact on many social and economic fronts, such as rural economic development, poverty reduction, health, education, and women empowerment. So, the project, as rural electrification in nature, is highly prioritized by the government of Bangladesh.

10. Typical installation works under Component 1 are exhibited in the following pictures.

a. Typical installation: transformer

Small low-voltage (6.35/0.23 kV) transformers will be installed on existing poles, like the one in following pictures. Electrical cables are run from the transformer to nearby houses or other structures and connected to a meter; cables for 3 connections are visible in the picture at right. No civil works or earthwork is required. Typical service connection length is 20-30 meters.

¹ Two projects are listed as examples. World Bank, 2014. Rural Electricity Transmission and Distribution Project. JICA, 2010. Rural Electrification Upgradation Project.



Site: A rural village, Gazipur PBS, north to Dhaka

b. Typical installation: service drops and meters

The connecting cable (“service drop”) is barely visible in the left picture; the meter is barely visible in the right picture.



Site: A rural village, Gazipur PBS, north to Dhaka

IV. Environmental and Social Aspects

11. The Project is anticipated to have minimal adverse environmental and social impacts that can be avoided or minimized by the adoption and implementation of standard “good practices” that are summarized in Section V. These measures include: use of good health and safety practices by installation crews, outreach and support for consumer safety by new users of electricity, management of materials that are to be recycled or disposed of as waste, and provision of information to users on the environmental benefits of electricity.

12. The project is not anticipated to have adverse social impacts. As the project will be conducted in the areas which are covered by existing distribution networks, it does not require construction of any substations, distribution lines or large civil structures. All service drops and small low-voltage transformers will be provided to PBSs and installed on existing poles in their own areas under the supervision of BREB. Also, as the service connections will be installed purely on a voluntary basis – any potential rural consumer who wants a connection can submit an application. Component 1 does not require involuntary resettlement, land acquisition or economic displacement, and is not expected to have any negative impacts on either Indigenous Peoples or ethnic minorities.

13. Implementation of Component 1 will contribute to the following environmental benefits: reduction of indoor air pollution by replacing liquid fuel such as kerosene for lighting; (ii) reduction of firewood collection and consumption for lighting and cooking; and (iii) improvement of energy efficiency and mitigation of carbon emissions by reducing diesel consumption for irrigation, agricultural processing, light industry, commerce and service delivery.

V. Environmental and Social Good Practices

14. The table below summarizes good practices for environmental and social management that would be applied by BREB and PBSs during project implementation and operation.

Table 5.1: Environmental and Social Good Practices

Parameter / matter	Recommended Practices
New connections	Continue with consumer outreach programs to encourage applications for new connections. Distribution relevant information on benefits of access to energy and productive end-use of energy, and suggestions for energy efficient lighting and appliances.
Good project implementation	Schedule construction to minimize time required for installation of transformers, service drops, and meters. Provide advance notice to affected stakeholders, including contact information for PBS officers and construction contractors.
Human safety: construction	Install service drops with recommended horizontal and vertical clearance (set-back distances). Have construction crews wearing proper safety gear (e.g., hard hats, steel

	toed boots, and climbing harnesses). Set up temporary barricades around working area when transformers are installed on poles.
Human safety: electricity consumption	Provide summary sheets of electrical hazards, warning signs, and posters with “do’s and don’ts” for new consumers.
Project waste recycling and disposal	Some old inefficient transformers may be replaced by new efficient ones. In this case old transformers will be recycled and may be used for operation and maintenance purposes if needed. Some project wastes may be generated and will need to be collected and properly disposed.
Reduction of liquid fuel consumption	Provide consumers with information on benefits of switching to electricity for lighting, irrigation, agricultural processing, and other purposes, so that reliance on primitive biomass fuels, kerosene, diesel and/or gasoline is reduced.

VI. Public Engagement, Information Disclosure and Complaint Procedures

15. BREB/PBSs have established “open door” facilities so that any consumers and stakeholders can apply for services, report outages and other problems, and file complaints and have these grievances redressed. The “open door” facilities include: a corporate website with English and Bengali pages, and local branches with one-stop service windows and a complaint center. The established facilities will be used during the project implementation.

16. The following steps are proposed going forward with project approval and implementation:

- (i) The Environmental and Social Review will be disclosed on the BREB website in English and Bengali, and on the AIIB website.
- (ii) BREB/PBSs will post the 1-page information notice to support the project implementation process, at each of its service centers, which will include: (a) project description, (b) implementation schedule, (c) expected impacts and benefits, (d) a summary of environmental and social good practices to be used, and (e) complaint and grievance redress procedure.
- (iii) BREB/PBSs will implement the Environmental and Social Good Practices summarized in Section V (above).