

BANGLADESH DISTRIBUTION SYSTEM UPGRADE AND EXPANSION PROJECT

COMPONENT 2: NORTH DHAKA SYSTEM UPGRADE

INITIAL ENVIRONMENTAL EXAMINATION (IEE)

April 2016

Prepared by DESCO, Ministry of Energy and Mineral Resources, Government of Bangladesh for
the Asia Infrastructure Investment Bank

CURRENCY EQUIVALENTS

(as of 21 April 2016)

Currency unit	-	taka (Tk.)
Tk.1.00	=	\$ 0.013
\$1.00	=	Tk. 78.48

AIIB	-	Asian Infrastructure Investment Bank
AIS	-	Air Insulated Switchgear
BBS	-	Bangladesh Bureau of Statistics
BMD	-	Bangladesh Meteorological Department
BPDB	-	Bangladesh Power Development Board
BREB	-	Bangladesh Rural Electrification Board
CITES	-	Convention on International Trade in Endangered Species
DESCO	-	Delhi Electric Supply Company Limited
DMP	-	Dhaka Metropolitan Police
DNCC	-	Dhaka North City Corporation
DOE	-	Department of Environment
EA	-	Executive Agency
ECA	-	Environment Conservation Act
EIA	-	Environmental Impact Assessment
EHS	-	Environment, Health and Safety
EMP	-	Environmental Management Plan
ESMP	-	Environmental and Social Management Plan
EQS	-	Environment Quality Standards
GIS	-	Gas Insulated Switchgear
GOB	-	Government of Bangladesh
GRC	-	Grievances Redress Committee
HHs	-	Households
IEE	-	Initial Environmental Examination
km	-	Kilometer
kV	-	kilo Volt
LILo	-	Line in Line Out
MoEF	-	Ministry of Environment and Forest
MVA	-	Mega Voltage
MW	-	Mega Watt

NGOs	-	Non- Governmental Organizations
NOC	-	No Objection Certificate
NWRD	-	National Water Resource Database
PDB	-	Power Development Board
RCC	-	Reinforced Cement Concrete
REB	-	Rural Electricity Board
R&H	-	Roads and Highways Department
RoW	-	Right of Way
SPM	-	Suspended Particulate Matter
SRDI	-	Soil Research Development Institute
ToR	-	Terms of Reference
WASA	-	Water and Sewerage Authority

WEIGHTS AND MEASURES

°C	-	degree Celsius
dB(A)	-	decibel acoustic
GWh	-	giga watt hour
ha	-	hectare
km	-	kilometer
km/h	-	kilometer per hour
kWe	-	kilowatt-electric
kV	-	Kilo volt(s)
kVA	-	kilo Volt-Amps
m	-	meter
mm	-	millimeter
m ³	-	cubic meter
m ³ /hr	-	cubic meters per hour
mg/l	-	milligrams per liter
m/s	-	meters per second
MTPA	-	metric tons per annum
MW	-	megawatt
ppm	-	parts per million
ppt	-	parts per thousand
rpm	-	revolutions per minute
µg/m ³	-	microgram per cubic meter

GLOSSARY

Adverse impact: An impact that is considered undesirable.

Ambient air: Surrounding air.

Aquatic: Growing or living in or near water.

Bangla: Bengali language.

Baseline (or existing) conditions: The 'baseline' essentially comprises the factual understanding and interpretation of existing environmental, social and health conditions of where the business activity is proposed. Understanding the baseline shall also include those trends present within it, and especially how changes could occur regardless of the presence of the project, i.e. the 'No-development Option'.

Beneficial impacts: Impacts, which are considered to be desirable and useful.

Biological diversity: The variety of life forms, the different plants, animals and micro organisms, genes they contain and the ecosystems they form. It is usually considered at three levels: genetic diversity, species diversity and ecological diversity.

Ecosystem: A dynamic complex of plant, animal, fungal and microorganism communities and associated non-living environment interacting as an ecological unit.

Emission: The total amount of solid, liquid or gaseous pollutant emitted into the atmosphere from a given source within a given time, as indicated, for e.g., in grams per cubic meter of gas or by a relative measure, upon discharge from the source.

Endangered species: Species in danger of extinction and whose survival is unlikely if the existing conditions continue to operate. Included among those are species whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to suffer from immediate danger of extinction.

Environmental effects: The measurable changes, in the natural system of productivity and environmental quality, resulting from a development activity.

Environmental Impact: An estimate or judgment of the significance and value of environmental effects for natural, socio-economic and human receptors.

Environment and Social Management Plan (ESMP): A Plan to undertake an array of follow-up activities which provide for the sound environmental management of a project/ intervention so that adverse environmental impacts are minimized and mitigated; beneficial environmental effects are maximized; and sustainable development is ensured.

Environmental Management: Managing the productive use of natural resources without reducing their productivity and quality.

Evaluation: The process of looking back at what has been really done or accomplished.

Fauna: A collective term denoting the animals occurring in a particular region or period.

Field Reconnaissance: A field activity that confirms the information gathered through secondary sources. This field study is essentially a rapid appraisal.

Flora: All of the plants found in a given area.

Habitat: The natural home or environment for a plant or animal.

Land use: Types include agriculture, horticulture, settlement, pisciculture and Industries

Mitigation: An action, which may prevent or minimize adverse impacts and enhance beneficial impacts.

Negative Impact: Negative change from the existing situation due to the project.

Public involvement / Public consultation: A range of techniques that can be used to inform, consult or interact with stakeholders'affected / to be affected by a proposal.

Reversible impact: An environmental impact that recovers either through natural process or with human assistance.

Stakeholders: Those who may be potentially affected by a proposal, e.g. local people, the proponent, government agencies, nongovernmental organizations, donors and others, all parties who may be affected by the project or to take an interest in it.

Taka: Unit of Bangladeshi currency.

Terrestrial: Living on land.

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Executive Summary

The Dhaka Electric Supply Company Limited (DESCO) is planning to upgrade 2 existing substations, and install underground 33 kV distribution lines in the Dhaka urban area. The proposed project will increase power capacity and energy transfer, reduce system losses, and improve the quality and reliability of electricity service.

The Asian Infrastructure Investment Bank (AIIB) may provide financial assistance for the project. In accordance with the Government of Bangladesh (GoB) requirements, DESCO is required to prepare an Initial Environmental Examination (IEE) report for Department of Environment (DoE) site clearance, and if necessary a follow-on Environmental Impact Assessment (EIA) report for DoE environmental clearance. The project has been identified and developed to respond to electricity demand growth and improve service reliability and safety of distribution operations.

The project has been designed to avoid and minimize potential environmental and social impacts. Aside from local, temporary, and reversible disruptions during construction, the project will not have any significant negative impact. The potential air quality and noise impacts are minor and probably can not be distinguished from baseline levels. Practical mitigation and monitoring measures have been identified, the most important of which is scheduling to minimize the time required for construction. The proposed project will have no residual adverse impact on the environment and will have minimal social impacts. After construction is completed, the project will generate environmental and social benefits accruing from improved electricity supplies and removal of overhead distribution lines.

AIIB has classified the project in Category B under the provisions of its Environmental and Social Policy and Environmental and Social Performance Standards. This draft IEE includes an Environmental and Social Management Plan (ESMP) for project implementation and monitoring.

1. Introduction

1.1 Background

1. Electricity demand is increasing throughout the country, 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.

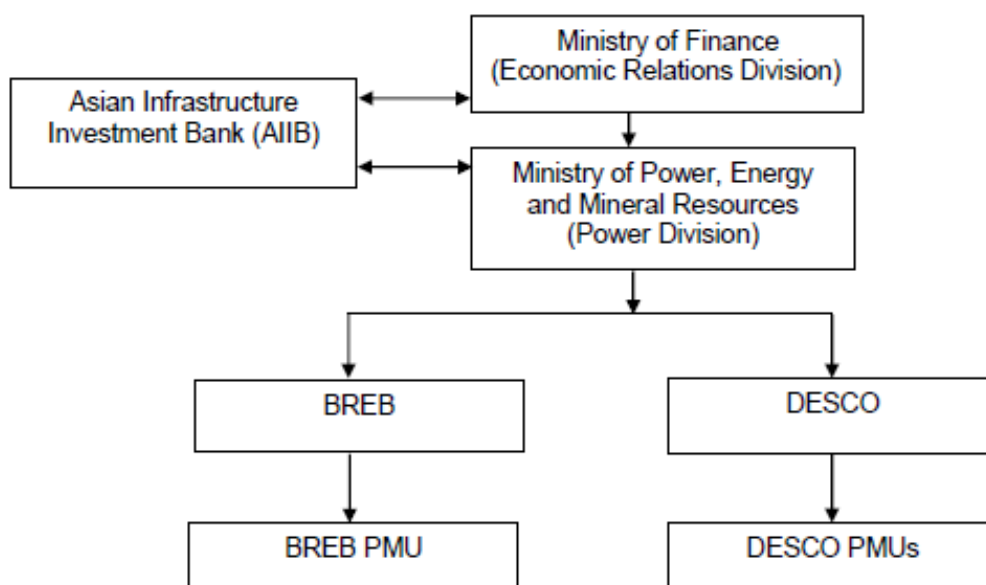
Component 2: Upgradation of grid substations and conversion of overhead distribution lines. The Dhaka Electric Supply Company Ltd. (DESCO) will (i) replace the small inefficient 50/75 Megavolt-ampere (MVA) transformers and air-insulated switchgear systems at Bashundhara and Uttara grid substations with 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 the GoB requirements, project owners are required to prepare an Initial Environmental Examination (IEE) report for Department of Environment (DoE) site clearance, and if necessary a follow-on Environmental Impact Assessment (EIA) report for DoE environmental clearance. Under the GoB regulatory system the 2 components are considered to be separate projects, each requiring an IEE and if necessary and EIA. BREB is seeking the necessary clearances from DoE independently of DESCO. This draft IEE applies only to the DESCO Component (hereafter referred to as “the DESCO Project”).

1.2 Overview of Proposed investments of the DESCO Component

5. The DESCO Project has two components: (i) upgrade of 2 existing substations, and (ii) installation of underground 33 kV distribution lines, as shown in Table 1.2. The components will increase power capacity and energy transfer, reduce system losses, and improve the quality and reliability of electricity service.

Table 1.2: Upgrading Distribution System in North Dhaka

No	Activities	Length/area/No. (km/acre)
Sub-stations		
1	Upgrading of existing 132/33/11 kV at Bashundara from AIS to GIS	Existing substation
2	Upgrading of existing 132/33 kV/11 kV substation at Uttara from AIS to GIS	Existing substation
Distribution line		
1	Installation of 85 km of 33 kV underground lines	85 km

Source: DESCO, Planning and Design Unit

1.3 Environmental Assessment Requirements

6. According to the Environment Conservation Act 1995 and Environment Conservation Rules 1997, power distribution line projects fall under 'Red' category which requires IEE and EIA to obtain 'Site Clearance' and 'Environmental Clearance' respectively from DoE. In this context, this IEE has been prepared by DESCO for purposes of obtaining the necessary DoE site clearance and environmental clearance. Given the project benefits after construction is complete, and that environmental and social impacts will occur only during construction and are minimal, reversible, and localized, DESCO is requesting that this IEE be deemed sufficient for purposes of obtaining the necessary DoE site and environmental clearances. At the same time, the environmental and social management plan (ESMP) included in this IEE will guide project implementation in accordance with AIB requirements.

1.3.1 *Structure of the Report*

7. **Chapter 1** presents a brief overview of the project IEE along with its background, objectives, and scope of work. **Chapter 2** outlines the Policy and Legislation on environmental issues. **Chapter 3** describes the proposed physical interventions including the need for the project and alternatives. **Chapter 4** presents a description of the baseline conditions of the project area. **Chapter 5** discusses the environmental and social impacts of the proposed project and proposed mitigation measures. **Chapter 6** presents the environmental and social management plan. **Chapter 7** summarizes the consultation and disclosure procedures and activities, and stakeholder feedback on the project. **Chapter 8** presents the findings, conclusion, and recommendations of the IEE study.

2. Policy and Legislation

2.1 National Environmental Requirements

8. This section presents the regulatory agency, process, regulations and international environmental agreements relevant to the Investment Program.

2.1.1 Environmental Authority

9. The Ministry of Environment and Forest (MOEF) is the agency of the GOB in planning, promotion, coordination and overseeing the implementation of environmental and forestry programs. MOEF oversees all national environmental matters and is responsible for activities such as prevention and control of pollution, forestation and regeneration of degraded areas and protection of the environment, and in the framework of legislations. MOEF also conducts surveys, impact assessment, control of pollution, research, and collection and dissemination of environmental information and creation of environmental awareness among all sectors in Bangladesh.

10. Under the MOEF, the DOE was established as the primary government authority mandated to regulate and enforce environmental management regulations to ensure sustainable development and to conserve and manage the environment of Bangladesh. The DOE implements the duties of the MOEF on-the-ground through the consistent application of environmental rules and regulations, and provide guidance, training and promotional campaign on improving the awareness of environmental issues.

2.1.2 Applicable Environmental Regulations

11. The *Environment Conservation Act (ECA)* of 1995 (amended in 2000 and 2002) provides for the protection of the environment, improvement of environmental standards, and the control and abatement of environmental pollution. This Act gives authority to the DOE to carry out any activity needed to conserve and enhance the quality of environment, and to control, prevent and mitigate pollution.

12. The *Environment Conservation Rules (ECR)* of 1997 (adopted under the provision of ECA 1995 and amended in 2002 and 2003) provides rules related to the declaration of ecologically-critical areas, obtaining environmental clearance certificate, environmental quality standards, acceptable limits for discharges of waste, and environmental guidelines on pollution prevention. ECA 1995 and ECR 1997 outline the regulatory mechanism to protect the environment in Bangladesh.

2.1.3 Securing Environmental Clearance

13. Section 12 of ECA 1995 provides that no industrial unit or project can be established or undertaken without obtaining an environmental clearance certificate (ECC) from the Director General, DOE. In accordance with the ECR 1997, DOE has classified development interventions based on their potential adverse environmental impacts for the purpose of issuing the ECC. The categories are: (i) green, (ii) orange A, (iii) orange B, and (iv) red.

14. The application for ECC from the DOE has two steps: (i) site clearance certificate is obtained at the initial stage and (ii) the ECC at the advanced stage. ECC is required for all the categories (i.e., green, orange A, orange B, and red). A site clearance and ECC are required

for industries and/or projects in the categories: orange A, orange B, and red. Distribution lines are included in the “red” category.¹

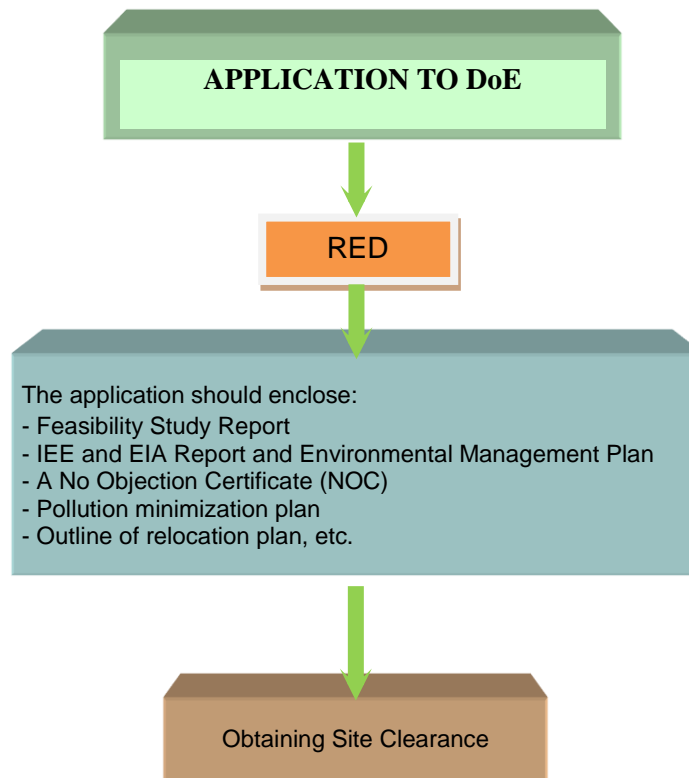
15. The issuance of ECC by the DOE for the site clearance of Orange A projects will be within 30 days upon receipt of application, then for Orange B it will be 60 days. Once the site clearance is obtained for Orange A and Orange B projects, the ECC can be applied. DOE will issue or disapprove the ECC for Orange A projects within 15 days and within 30 days for Orange B projects. The ECC is valid for one year depending on the compliance of the conditions and must be renewed 30 days prior to the expiry date.

16. No environmental study is required for Green industries or projects since they are considered to be relatively pollution-free. However, a no objection certificate (NOC), normally taken from the local authorities, is required for submission to the DOE including a general information about the project/industry, and a description of the raw materials and finished products.

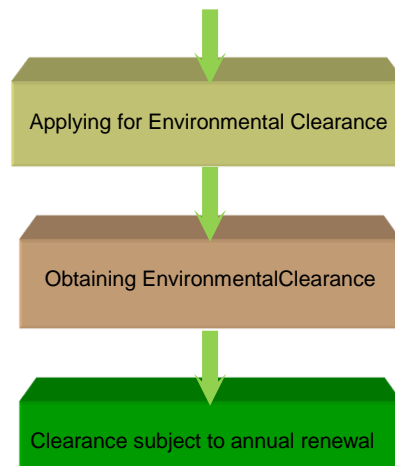
17. To obtain the site clearance, projects or industries within the Orange A category are required to submit general information, NOC, feasibility report, description of raw materials and finished products, process flow diagram, lay out plan, and effluent disposal system.

18. For Red category, the application for site clearance and ECC includes the feasibility report, IEE and EIA, environmental management plan (EMP), a NOC, pollution minimization plan, and an outline of relocation plan. **Figure 2.1** presents the process of application for ECC to the DOE including the documents required.

Figure 2.12: DoE Environmental Clearance Procedures



¹ Power plants are also included in the “red” category. Substations are not specifically mentioned in the “red” list, but are included in environmental assessments as a matter of practice for transmission and distribution projects.



NOC = No Objection Certificate, usually obtained from local government.

- Note:
1. These requirements vary from those of the DoE (1997) in requiring EMPs for proposed, as well as current, projects.
 2. Procedure of obtaining Environmental Clearance: for Green Category Projects the gestation period for granting Environmental Clearance has been fixed at within 15 days; for Orange A, Orange B and Red Category Projects at first Location Clearance and thereafter Environmental Clearance will be granted. The gestation period for Location Clearance is within 30 days for Orange A, and within 60 days for Orange B and Red Category Projects.

Source: Adapted from the Environmental Guidelines for Industry (DoE, 1997)

2.1.3 Relevant International Environmental Agreements

19. The following is a list of international environmental agreements that Bangladesh has signed, which are generally applicable to energy sector development. None of these conventions have a direct bearing on the proposed project. The *Stockholm Convention on Persistent Organic Pollutants (POPS)* is relevant to transmission and distribution projects where polychlorinated bi-phenyls (PCBs) may still be in use in some transformers in Bangladesh. The *Paris Agreement* of December 2015 under the *United Nations Framework Convention on Climate Change* will be applicable when it enters into force in the future.

20. *Convention Concerning the Protection of the World Cultural and Natural Heritage* (Paris 1972) – this convention was accepted in Bangladesh on 3 August 1983 and ratified on 3 November 1983. This Convention defines and provides for the conservation of the world's heritage by listing the natural and cultural sites whose value should be preserved. There are no cultural heritage sites in the Dhaka urban area which will be directly affected by the project.

21. *Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar 1971)* – ratified on 20 April 1992 and which provides a framework for national action and international cooperation for the conservation and sustainable use of wetlands and their resources. Bangladesh has two Ramsar sites, the Tangaur Haor (Northeast of Bangladesh) and parts of Sundarban Reserved Forest (Southwest of Bangladesh), which are well outside of the project area.

22. *Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington 1973)* – also known as CITES was signed on 20 November 1981. This

Convention provides a framework for addressing the overharvesting and exploitation patterns that threaten species of flora and fauna. Under the Convention, the governments agree to restrict or regulate trade in species that are threatened by unsustainable patterns. Component 2 is not within the habitat areas which are likely to have endangered species of wildlife and flora. The project sites are located in the built-up areas of Dhaka, and the DESCO Project is not anticipated to contribute to exploitation of wild flora and fauna during construction and operation.

23. *Convention on Biological Diversity (1992)* – entered into force on 29 December 1993 and ratified on 20 March 1994. This provides for a framework for biodiversity and requires signatories to develop a National Biodiversity Strategy and Action Plan. The DESCO Project is not subject to the specifics of of this convention.

24. *Convention on the Conservation of Migratory Species of Wild Animals (Bonn 1979)* – this sets the framework for agreements between countries important to the migration of threatened species. The DESCO Project will not directly impact any areas known or likely to be habitat of migratory species of wild animals.

25. *Stockholm Convention on Persistent Organic Pollutants (POPS)* – a global treaty in May 2001 which was made effective in May 2004 to protect human health and the environment from chemicals that remain intact for a long time and become widely distributed geographically and accumulate in human and wildlife tissue. GOB signed the Stockholm Convention on POPS on 23 May 2001 and was ratified on 27 March 2007. The treaty requires the Parties to take measures to eliminate or reduce the release of POPS in the environment. The POPS of major concern to power sector projects is the polychlorinated biphenyl (PCB) used before as a transformer oil. PCB is not manufactured in Bangladesh and its international production generally was ended in 1980. The transformers to be replaced as part of the project use mineral oil and as shown on the manufacturers nameplates (which are attached to the transformers) do not contain PCBs; the new transformers will not contain PCBs.

2.2 National Organizations with Related Environmental Standards

26. The roles and responsibilities of different ministries and departments related with enforcement of environmental requirements are described below in brief:

Ministry of Environment and Forest (MoEF)

27. The Ministry of Environment and Forest (MoEF) is the key government institution in Bangladesh for all matters relating to national environmental policy and regulatory issues. Realizing the ever-increasing importance of environmental issues, the MoEF was created by replacing the Ministry of Agriculture and Forest in 1989 and is at present a permanent member of the Executive Committee of the National Economic Council. This group is the major decision-making body for economic policy issues and is also responsible for approving all public investment projects. The MoEF oversees the activities of the following technical/implementing agencies:

- Department of Environment (DoE)
- Forest Department (FD)
- Forest Industries Development Corporation (FIDC)

Department of Environment (DoE)

28. The DoE is a department of the MoEF and is headed by a Director General (DG). The DG has complete control over the DoE. The power of the DG, as given under the Act, may be outlined as follows:

- The DG has the power to close down activities considered harmful to human life or the environment. The operator has the right to appeal and procedures are in place for this. However, if the incident is considered an emergency, there is no opportunity for appeal.
- The DG has the power to declare an area affected by pollution as an ecologically critical area. The DoE governs the type of work or process, which can take place in such an area.
- Before undertaking any new development project, the project proponent must take an Environmental Clearance from the DoE. The procedures to take such clearance are in place.
- Failure to comply with any part of the Environment Conservation Act (ECA) 1995 may result in punishment by a maximum of 5 years imprisonment or a maximum fine of Tk. 100,000, or both.

2.3 Compliance with DESCO EHS Requirements

29. DESCO is committed to managing its operations in a safe, efficient and environment friendly manner. The company appoints environmental consultants who on behalf of DESCO, assesses environmental issues for different projects, and prepare IEEs and EIAs to obtain Clearance from DOE (Department of Environment). As DESCO is a distribution company, most of its projects have limited impact on environment. The company's corporate philosophy is to place the safety of our communities, customers and employees at the forefront of operations. DESCO advises safety tips for home, office, and contractors which are posted on DESCO website [see this link: <https://www.desco.org.bd/index.php?page=safety-2>].

30. When contractors are employed to execute any project or normal operational work, they are bound to obey the following DESCO EHS guidelines and regulations throughout the execution and completion of the works and services in accordance of the contract (which are cited in contract documents):

- (i) Must maintain the full safety of all persons entitled to be upon the work site and keep the work and services in the work site in an orderly state.
- (ii) Provide and maintain at the contractor's own cost all warning signs and watching the safety and protection of the working personnel as well as works and services.
- (iii) Take all necessary steps to protect the environment on and off the work site and to avoid damage or nuisance to person or to property of the public or others.
- (iv) During execution of works the contractor shall comply with all applicable rules and regulations of other agencies like Dhaka Metropolitan Police (DMP), Dhaka North City Corporation (DNCC), Roads and Highway Department (R&H), and Dhaka Water and Sewerage Authority (WASA).

31. DESCO has an insurance policy for its all employees (Own & Out-sourcing). Articles of the contract are furnished in such a manner that the contractors are bound to make first party insurance with Jibon Bima Corporation (Govt. Insurance Company) against approved personnel. The company has written guidelines for the third party and different out-sourcing firms who are stakeholders of DESCO to maintain the safety tips while working under DESCO jurisdiction. As per the guideline the out-sourcing company is responsible to provide all the medical expenses for any kind of casualty while working for DESCO.

DESCO is now practicing all the quality management standards for better service and applied for ISO 9001 certification.

2.4 Related Rules and Policies

32. In addition to the policies, rules and regulations related to the environment and energy, the following rules and regulations, listed in Table 2.1, are to be checked for their potential applicability.

Table 2.1: Environmental Laws, Regulations and Standards of Bangladesh

Year	Title	Objectives
1885	The Telegraph Act (Act XIII of 1885)	Under the law sections 10- 19, Government built distribution line through the country.
1910	The Electricity Act (Act IX of 1910)	Under the law section 51, Government built distribution line through the country.
1950	East Bengal Protection and Conservation of Fish Act	Protection and conservation of fish in Bangladesh.
1985	The Protection and Conservation of Fish rules	Prevention of harming fisheries resource and fisheries habitat in coastal and inland waters.
1953	Town Improvement Act	Improvement and development of Dhaka City.
1958	Antiquities Act	Protection and preservation of archaeological and historical artifacts
1960, 1966	Port rules, shipping operation	Control of discharges in ports; waterway rules.
1965	Factories Act	Industrial workers' health and working conditions.
1971	Pesticide Ordinance	Pesticide use, production, selection and importation.
1976	Antiquities (Amendment) Ordinance	Protection and prohibition export of archaeological artifacts.
1977	Municipal Ordinance	Municipal activities in health, sanitation, water supply, drainage, etc. in the city.
1979	Factory Rules	Disposal of wastes and effluents.
1980	Agricultural Pesticides (Amendment) Act	Selection, use and handling of pesticides in the agricultural sector.
1982	Municipal Act	Drainage, sewerage, water supply and sanitation.
1982	Acquisition and Requisition of Immovable Property Ordinance	The Acquisition of Immovable Property Rules, 1982 (No. S. R. O. 172- U82) The

Year	Title	Objectives
		Government adopted these Rules in exercise of the powers conferred upon by Section 46 of The Acquisition and Requisition of Immovable Property Ordinance, 1982 (Ordinance No. II of 1982).
1983	Agricultural Pesticides (Amendment) Ordinance	Revised Agricultural Pesticides Ordinance.
1985	The Pesticide Rules	Pesticide selling, use and safety measures.
1990	Bangladesh standard specification for drinking water.	Formulation and revision of national standards.
1860	The Penal Code	This contains several Articles related with environmental protection and pollution management.
1996	Building Construction (Amendment) Act and Building Construction Rules	The Rules are more comprehensive for taking care of the present day circumstances and issues of building.

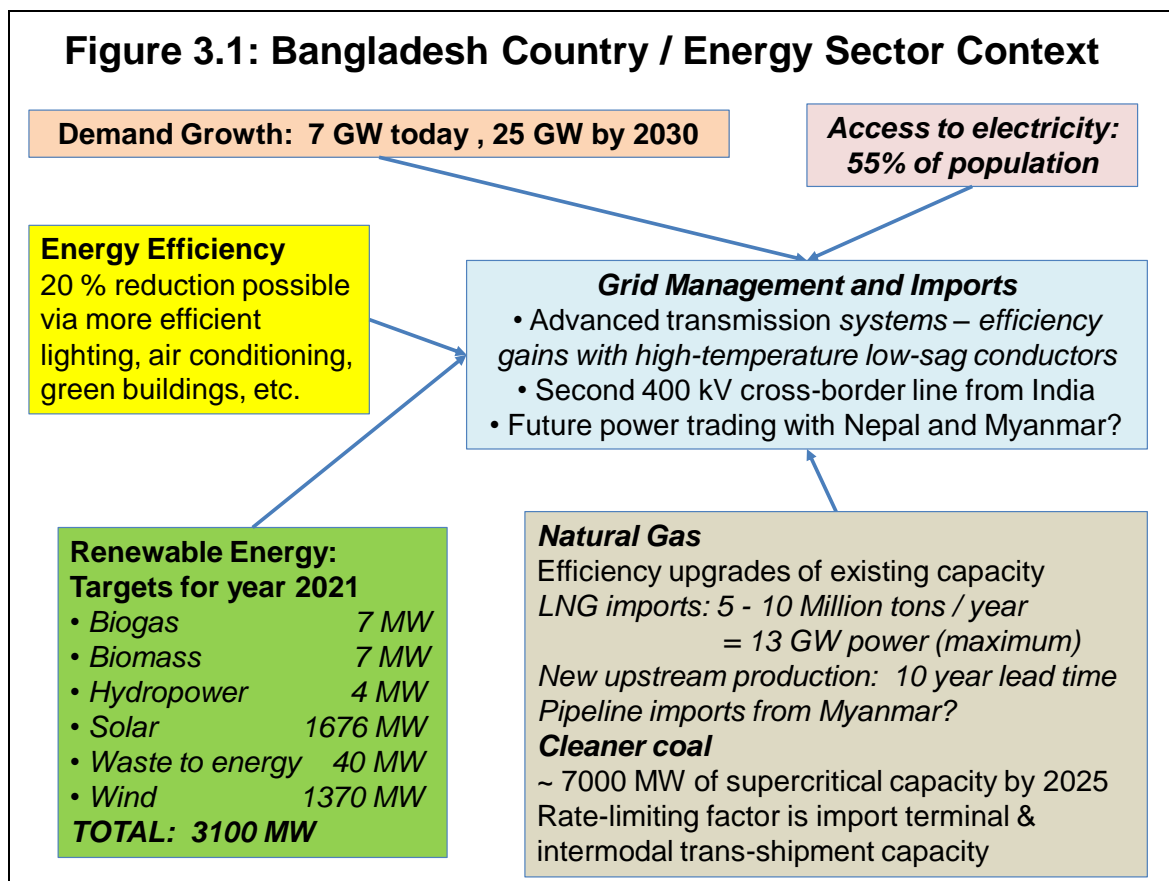
2.3 AIIB Environmental and Social Framework

33. AIIB recognizes that environmental and social sustainability is a fundamental aspect of achieving development outcomes consistent with its mandate to support infrastructure development and interconnectivity in Asia. The Environmental and Social Framework of AIIB (2016), includes an Environmental and Social Policy and Environmental and Social Standards. The Environmental and Social Policy specifies that AIIB conducts environmental and social due diligence as an integral element of its appraisal of the Project, and in a manner that is: (a) appropriate to the nature and scale of the Project; and (b) proportional to the level of the Project's potential environmental and social risks and impacts. In this context, the proposed DESCO Project has been placed in Category B by AIIB and the Bank has determined that an Initial Environmental Examination and Environmental and Social Management Plan are appropriate documentation.

3. Description of the DESCO Project

3.1 Need for the DESCO Project

34. Electricity demand is rapidly increasing throughout the country, and must continue increasing to meet the government’s objective of providing universal electricity access by year 2021. Installed capacity is projected to increase from about 7 gigawatts (GW) today to as much as 25 GW by the year 2030. Consistent with increase in demand and generation capacity, the transmission and distribution systems must be upgraded to deliver the additional power to consumers. The country and sector context are summarized in Figure 3.1.



3.2 Major DESCO Project Components

35. 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 33 kV underground cables over 24 segments. The DESCO Project will provide 50% greater power and energy capacity while also reducing system losses; energy savings of 21.9 million kilowatt-hours per year (kWh/y) are expected to be achieved. The main activities of the two components are presented in Table 3.1. Additional details of the 33 kV lines are presented in Table 3.2. The DESCO Project area showing the location of the Bashundhara and Uttara substations is shown in Figure 3.2. The indicative layout of the lines and substations are shown in Figure 3.3.

Table 3.1: Sub- projects, length and activities for the 33 kV lines and substations

Length (km) and nos.	Land needed (ha)	Sub-projects activities
85 km	25.5 Temporary access only	Conversion of 9 segments of existing 33 kV overhead to underground Upgrade of 3 segments of existing underground lines to higher capacity underground lines Construction of 12 segments of new 33 kV underground lines
2	0	Upgrading Bashundara and Uttara sub-stations via conversion from AIS to GIS switchgear and replacement of 50/75 MVA transformers with 80/120 MVA transformers

Source: DESCO, Project Office

Table 3.2: Additional Details of the 33 kV lines

Si. No.	Segment Name	Sub District / Upazilla	Approximate Length (km)	Conversion / Upgrade / New
1	Kafrul-Digun	Dhaka / Dhaka	3.07	Conversion of overhead to underground
2	Mirpur Old-Digun	Dhaka / Dhaka	2.23	Conversion
3	Dakshin Khan – Bashundara	Dhaka / Dhaka	4.07	Conversion
4	ADA – Bashundara	Dhaka / Dhaka	3.07	Conversion
5	ADA – Tongi Old	Dhaka-Ghazipur / Dhaka-Ghazipur	4.35	Conversion
6	Tongi 2 – Tongi Old	Gazipur / Gazipur	1.62	Conversion
7	Tongi 2 – Tongi 3	Gazipur / Gazipur	0.95	Conversion
8	Tongi 3 – Tongi Old	Gazipur / Gazipur	1.67	Conversion
9	Bashundara – Purbachal	Dhaka / Dhaka	6.70	Conversion
10	Bashundara Grid – Banani	Dhaka / Dhaka	8.70	Upgrade existing 400 mm ² to 500 mm ²
11	Kallyanpur – SS2	Dhaka / Dhaka	1.56	Upgrade existing 400 mm ² to 500 mm ²
12	Gulshan 1 – Gulshan 2	Dhaka / Dhaka	1.48	Upgrade existing 400 mm ² to 500 mm ²
13	Mirpur Old – SS2	Dhaka / Dhaka	2.06	New
14	Uttara Grid – Uttara S&D	Dhaka / Dhaka	2.45	New
15	Uttara S&D – CAB	Dhaka / Dhaka	1.23	New
16	Uttara S&D – Dakshin Khan	Dhaka / Dhaka	2.12	New
17	Gulshan 2 – Kakoli	Dhaka / Dhaka	0.89	New
18	Uttarkhan – Dakshin Khan	Dhaka / Dhaka	3.68	New

Si. No.	Segment Name	Sub District / Upazilla	Approximate Length (km)	Conversion / Upgrade / New
19	Agargao – Mohakhali Health	Dhaka / Dhaka	3.91	New
20	Digun – Sector 6	Dhaka / Dhaka	4.24	New
21	Dumni – Dakshin Khan	Dhaka / Dhaka	8.70	New
22	Uttara Grid 2 – CAB	Dhaka / Dhaka	5.36	New
23	Uttara Grid 2 – ADA	Dhaka / Dhaka	7.25	New
24	Aftanagar - Baridhara	Dhaka / Dhaka	3.63	New

Source: DESCO, Project Office

Figure 3.2: Project Area and Location of the Two Sub-stations to be Upgraded

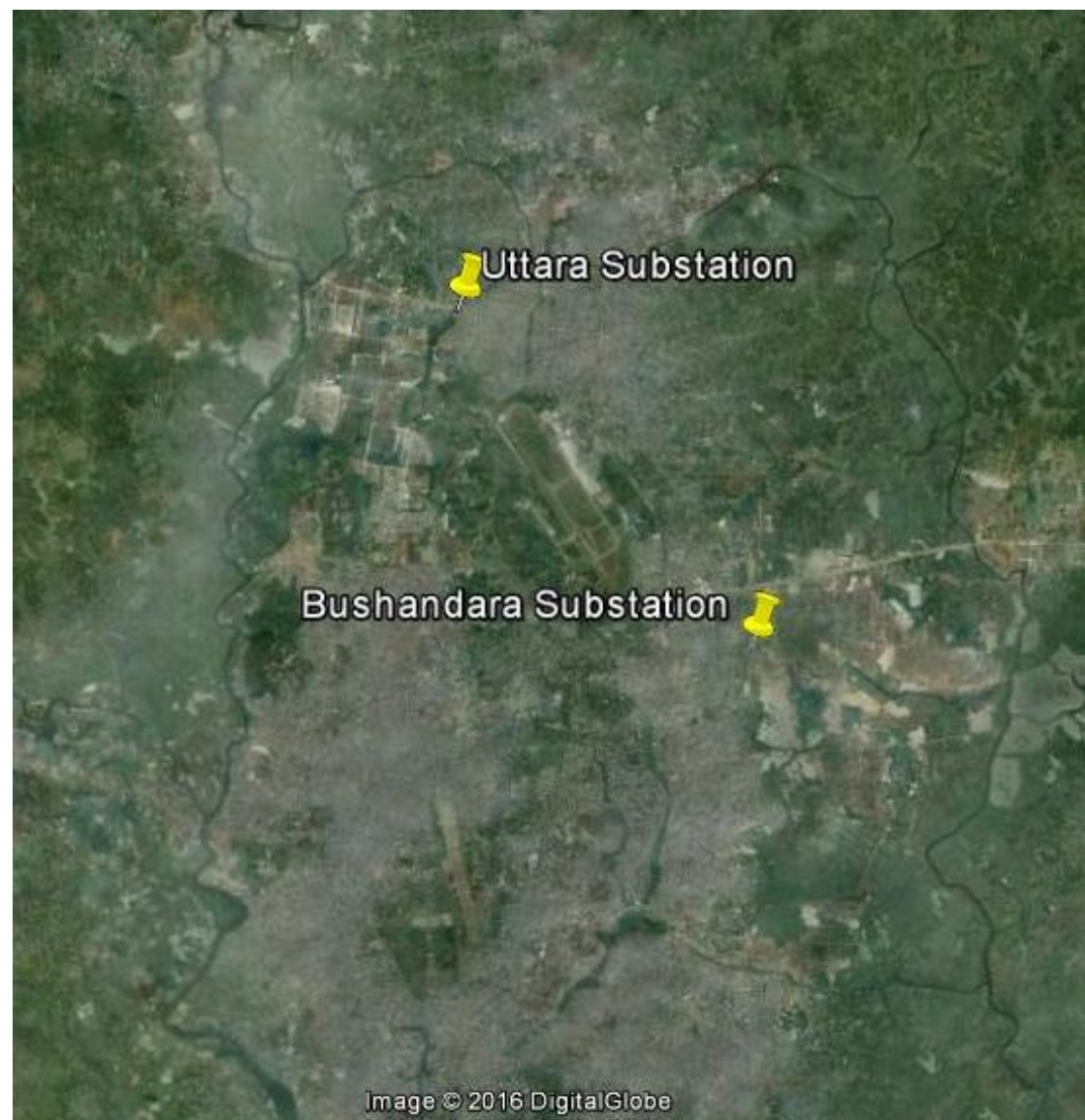
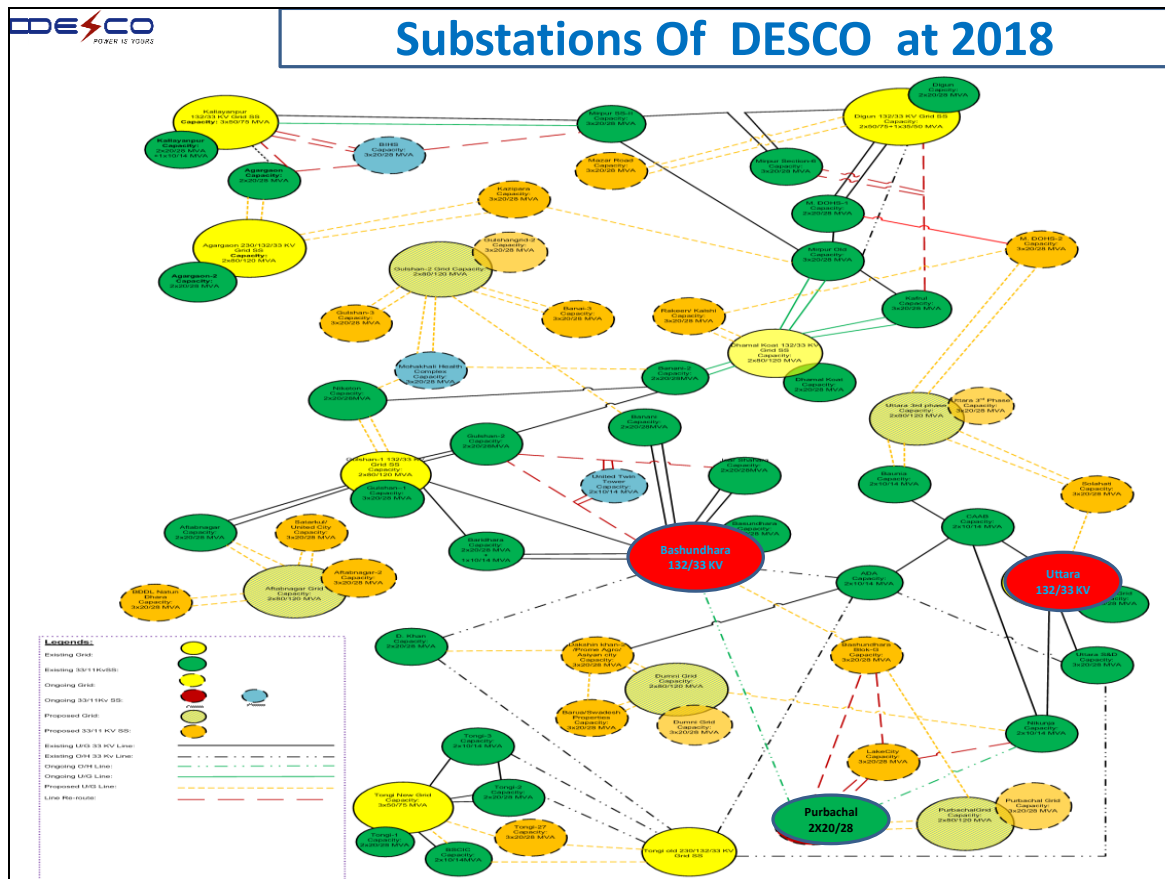


Figure 3.3: Indicative Layout of DESCO Substations and Distribution Lines



3.2 Analysis of Alternatives

3.2.1 No Project

36. Electricity demand is rapidly increasing throughout the country, and must continue increasing to support economic growth and meet the GoB objective of providing electricity to all by 2021. Without the project, the distribution system will be subject to overloading which will result in periodic power outages and declining quality of service. In the absence of reliable grid-supplied electricity, some consumers could utilize back-up generators fueled by diesel, gasoline (petrol), or possibly natural gas. Other consumers would have to rely on the available electricity supplies and tolerate declining service. The “no project” scenario is not acceptable in the context of national economic development objectives.

3.2.2 Alternatives

37. Electricity demand growth can be partly offset by improved end-use efficiency and through use of distributed generation (for example, rooftop solar power systems or natural gas fired generators). Efficiency improvements could probably reduce demand by about 20-25%, which would not be sufficient to offset long-term demand growth. The urbanized project area is characterized by high-rise and multi-story buildings. Rooftop solar could probably provide a maximum of 10% of a typical building’s demand, after energy efficiency measures are implemented. Natural gas fired generator sets would be an option if the long-term gas supply outlook were better; however, the national gas reserve base is declining and domestic gas

production is expected to be declining within a few years. End-use efficiency and distributed generation could help in the near term, but will not be sufficient for the long term.

3.2.3 The Proposed DESCO Project

38. The proposed DESCO Project is a straightforward response to demand growth and the need for continued improvements in service quality. The project will expand distribution system capacity in a relatively short period of time, i.e., 1.5 to 2 years will be required for construction.

39. The proposed DESCO Project was identified and prioritized based on the following criteria:

- System planning studies and projected demand by consumer categories
- Space availability within existing substation sites
- Location of substations with respect to existing 33 kV lines
- Access to temporary right of way for underground distribution lines
- Avoid crossing of “hard” infrastructure such as railway lines
- Avoid or minimize interference with commercial and residential properties

3.3 Physical Features of Distribution Lines

40. The major physical features of 33 kV distribution lines are given in Table 3.3. The distribution lines will utilize 500 mm² copper cables for all 24 segments, replacing 400 mm² copper cables (for 3 existing underground segments), and replacing conventional aluminum conductor steel reinforced (ACSR) “Merlin” cables on 9 segments of overhead lines converted to underground lines; the 12 new segments will also use 500 mm² copper cables. The replacement of ACSR Merlin cables with the 500 mm² copper cables use provides a 50% increase in capacity with reduced line losses.

Table 3.3: Physical Features of 33 kV lines

Physical Features	Attribute
Voltage Rating	33 kV
Type of Line	Double Circuit
Right of Way	3 meters comprising 1 meter for trenching + 1 meter on either side for temporary material stockpiling and safety
Type of Line Support	1 meter wide x 1.25 meter deep trench
Conductor Material	500 mm ² copper
Type of Connection	Sub-station to sub-station
Duration of Project Implementation	Total construction period of 18 months Individual segments will be constructed in sub-segments of 500 meters to 1000 meters length, requiring 21 – 30 days per sub-segment

Source: DESCO

3.4 Physical Features of Sub-stations

41. The sub-stations have electrical specifications for voltage, switchgear, circuit breaker, transformer, and protection systems. The key physical features of the sub-stations are given in Table 3.4. All sub-stations will be upgraded via conversion of switchgear from AIS to GIS and replacement of transformers.

Table 3.4: Physical Features of the Sub-station up-gradation

Features	Specification
Land ownership	land owned by DESCO
Scheme	Main Busbar scheme
No & Capacity	2 X 50/75 MVA
Voltage	132/33 kV
Switchgear Type	AIS to be converted to GIS
Insulation Medium Power Circuit Breaker	Gas Insulated Substation (GIS)
Transformer	Mineral oil insulated
Protection System Description	Auto fire extinguisher

Source: DESCO

4. Environmental and Social Baseline Condition

4.1 Project Area

42. The proposed project is located in the DESCO service area which is part of the greater Dhaka urban area. The DESCO Project area is the physical location of the proposed distribution lines and sub-stations of the project, while the potential impact area covers the geographic extent of the environmental and socioeconomic impacts resulting from implementation of the proposed project during pre-construction, construction and post-construction periods. The benefits of the proposed project components will extend to consumers in a significant portion of the DESCO area, which may be considered as the potential impact area (noting that the impacts are mostly beneficial in the post construction period). For the substation upgrades, construction will be inside-the-fence of existing facilities, with activities outside the fence limited to transport of used material and equipment out and new materials and equipment into the substation. For the 33 kV distribution lines, the project area is a 3 m temporary access right-of-way along roadways; disturbances may extend slightly beyond the 3 m RoW, but will vary from segment to segment depending on location-specific infrastructure and adjacent land use.

4.2. Description of Environment

4.2.1. Meteorology

43. **Climate.** The DESCO service area is within the monsoon climate characterized by rainy season that is hot and humid, winter that is predominantly cool and dry while the summer is hot and dry interrupted by occasional heavy rainfall. Dhaka is in the central region of Bangladesh where monsoon arrives in July and decreases by late October.

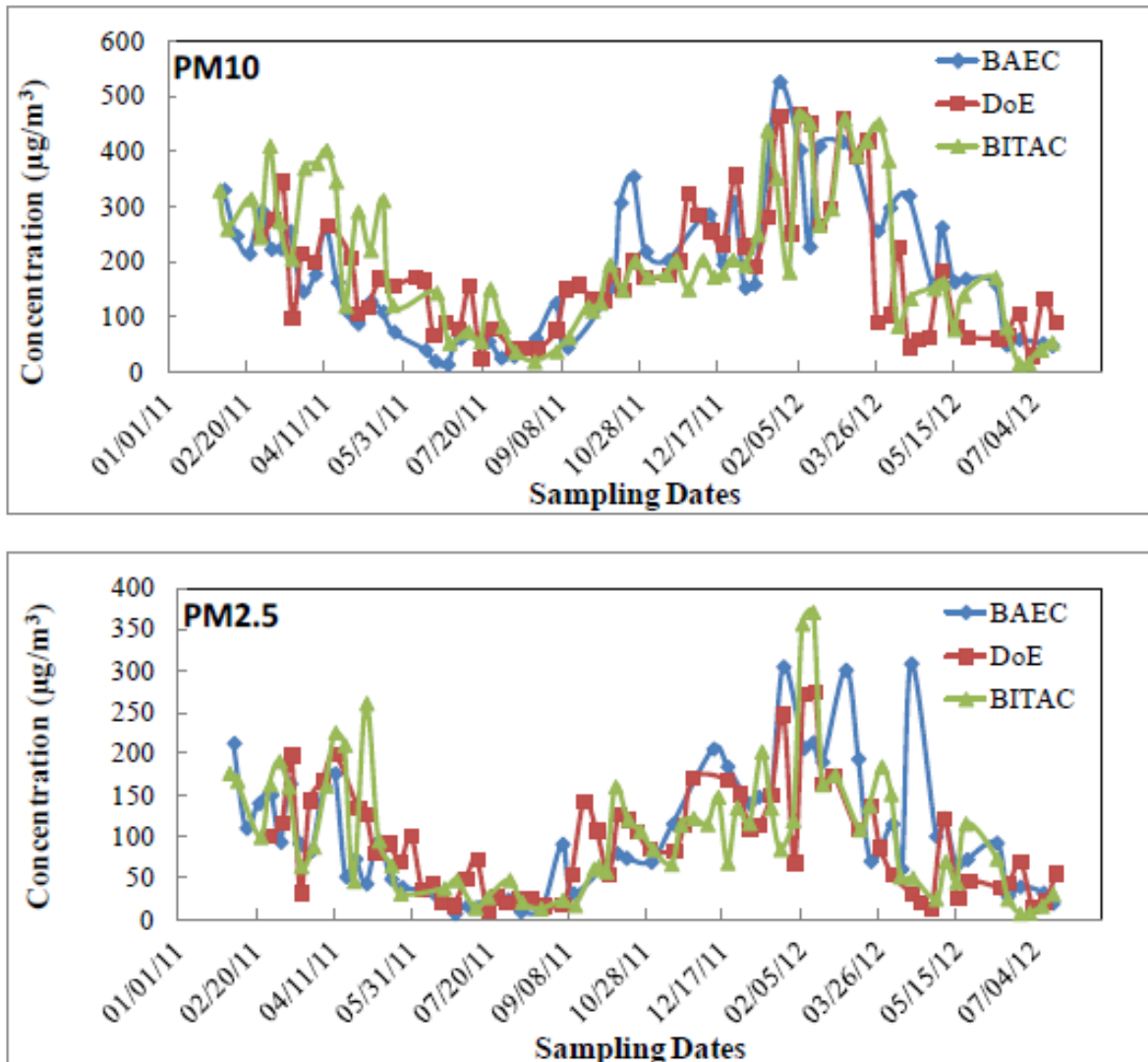
44. **Rainfall.** The maximum monthly rainfall recorded in Dhaka occurred in September 2004 at 839 mm. Historical rainfall data from 1988 to 2008 shows that the average maximum monthly rainfall is in July at about 400 mm while dry months start in November until March.

45. **Temperature.** Based on historical data from 1991 to 2011, the maximum temperature recorded was 36.44 °C in April 1995 while the lowest temperature during this period occurred in January 1995 at 11.33 °C. Monthly temperature ranges from about 12 °C to as high as 37 °C.

46. **Humidity.** June, July, August, September and October are most humid months with relative humidity ranging from 79% to 83%. Low humidity is experienced from January to April where the relative humidity ranges from 61% to 71%.

47. **Air quality.** Air quality in the greater Dhaka urban area is degraded due to vehicle and industrial emissions, and use of traditional biofuels for cooking in poorer areas which do not have access to commercial energy services. Figure 4.1 presents results of air quality monitoring conducted in 2011-12. The GoB ambient standards for suspended particulate matter (SPM, measured as PM10) range from 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in "Sensitive" areas up to 500 $\mu\text{g}/\text{m}^3$ in "Industrial and Mixed" areas. The World Health Organization (WHO) standard for fine particulate matter (PM2.5, which is more harmful to human health than PM10) is 10 $\mu\text{g}/\text{m}^3$. Figure 4.1 indicates that the PM10 standard for industrial and mixed areas may be achieved most of the time, but the WHO PM2.5 standard is almost never met.

Figure 4.1: Ambient Particulate Matter in the Dhaka Area



Source: Spatial Distribution of PM Concentrations in Dhaka City (January 2011 – June 2012), Clean Air and Sustainable Environment Project, Department of Environment, Ministry of Environment and Forests, Government of Bangladesh, August 2012.

48. **Noise Pollution.** Noise from traffic in the Dhaka area is an ever-present nuisance. GoB ambient noise standards range from a low of 35 decibels (dBA) for nighttime in “silent” zones (eg. 100 meters radius around hospitals) to a high of 75 dBA for daytime in industrial zones. The typical sound levels for various vehicle horns² are: (i) cars: 107–109 dBA, (ii) motorcycles: 109-112 dBA, (iii) trucks 117-118 dBA, and (iv) trains: 146–175 dBA (trains are generally required to have a very loud horn for safety purposes). An observation is that ambient noise standards are rarely met in the project area, unless vehicular traffic is non-existent.

4.2.2. Natural Hazards

² Source: https://en.wikipedia.org/wiki/Vehicle_horn

49. **Cyclones.** Seasonal storms known as Nor'westers (*Kalbaishakhi*) usually reach the maximum in April, low in May and minimum in March. Nor'westers affect the entire country and are generally associated with tornadoes and its impacts to substations and distribution lines should be incorporated in the detailed design.

50. **Flooding.** Bangladesh has three types of flooding: (i) seasonal monsoon flood, (ii) tidal flood, and (iii) flash flood which cause loss of lives and damage to properties. The flooding season generally starts in May until November. Most part of Dhaka experiences the annual monsoon flooding.

51. **Land Type.** Land type is classified based on depth of inundation during monsoon season caused by normal flooding on agricultural land. The land type recognized by the Soil Resource Development Institute is given in Table 4.1. The project components are located in highland (F0) or medium highland (F1) areas.

Table 4.1: Bangladesh Land Classification

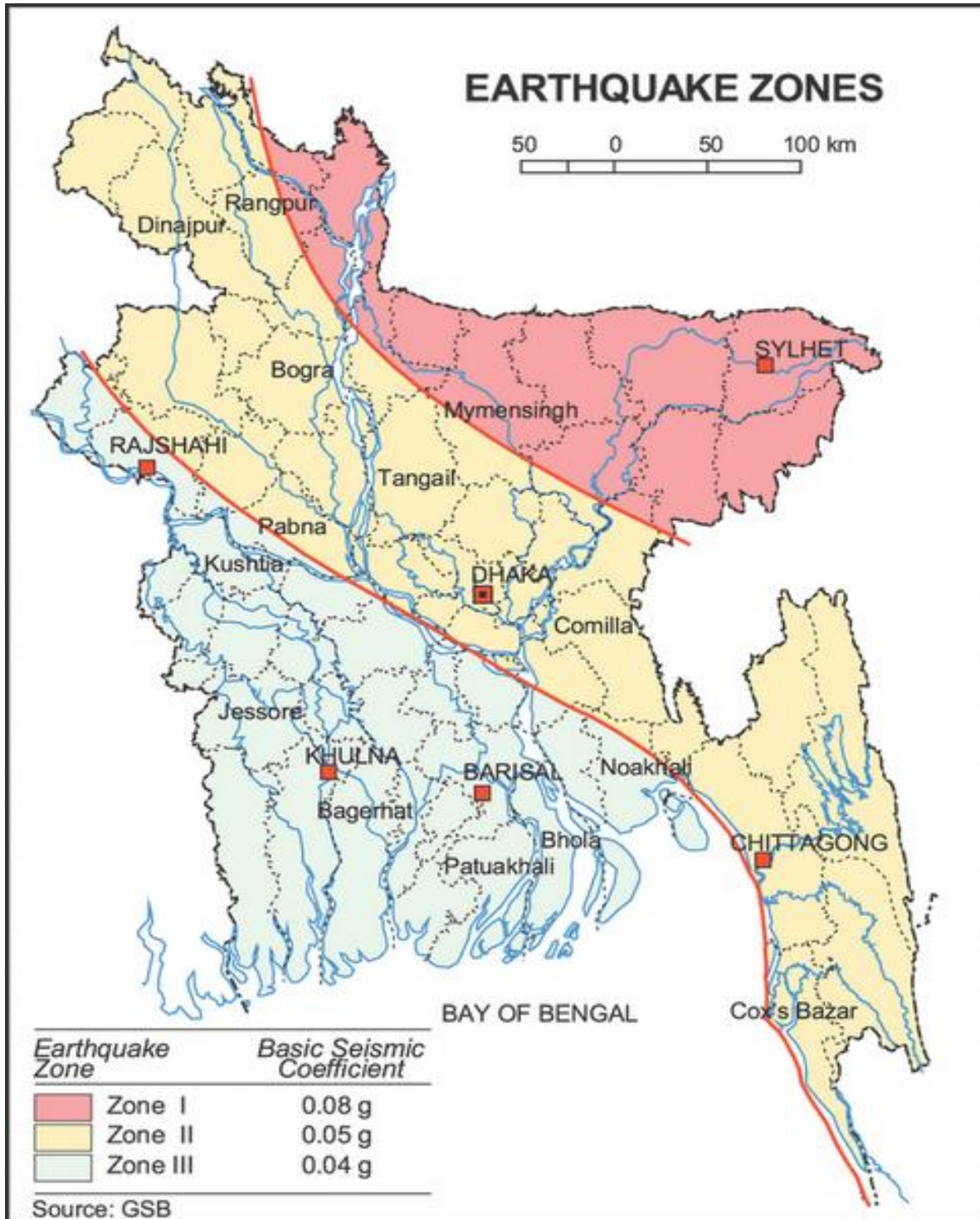
Land Type	Characteristic of Inundation During Flood Season
High land (F0)	Subdivided as follows: (i) land which above normal flood level (ii) normally flooded from 0-30 cm deep
Medium highland (F1)	Land which is normally flooded between 30-90 cm
Medium lowland (F2)	Land which is normally flooded between 90-180 cm
Lowland (F3)	Land which is normally flooded between 180-275 cm
Very lowland (F4)	Land which is normally flooded deeper than 275 cm

52. **Seismicity.** Bangladesh has been classified into three seismic zones, as shown in Figure 4.2. The project area is located in Zone II, characterized by relatively low tendency of earthquakes with a basic seismic coefficient of 0.05g.

4.2.3. Ecological Resources

53. The project areas are existing substations, commercial, and residential areas which have been extensively altered by human activity. The substations are located in built-up areas which are covered by roads and buildings, and the distribution lines will be buried beneath existing roadways. Flora and fauna have been largely displaced, with the exception of some trees planted in developed areas, and some distribution segments which have not been fully developed for commercial and residential use. The open areas where underground lines are to be installed will be developed in the foreseeable future. There are no endangered, threatened or protected species in the project areas.

Figure 4.2: Project area within the seismic zones of Bangladesh



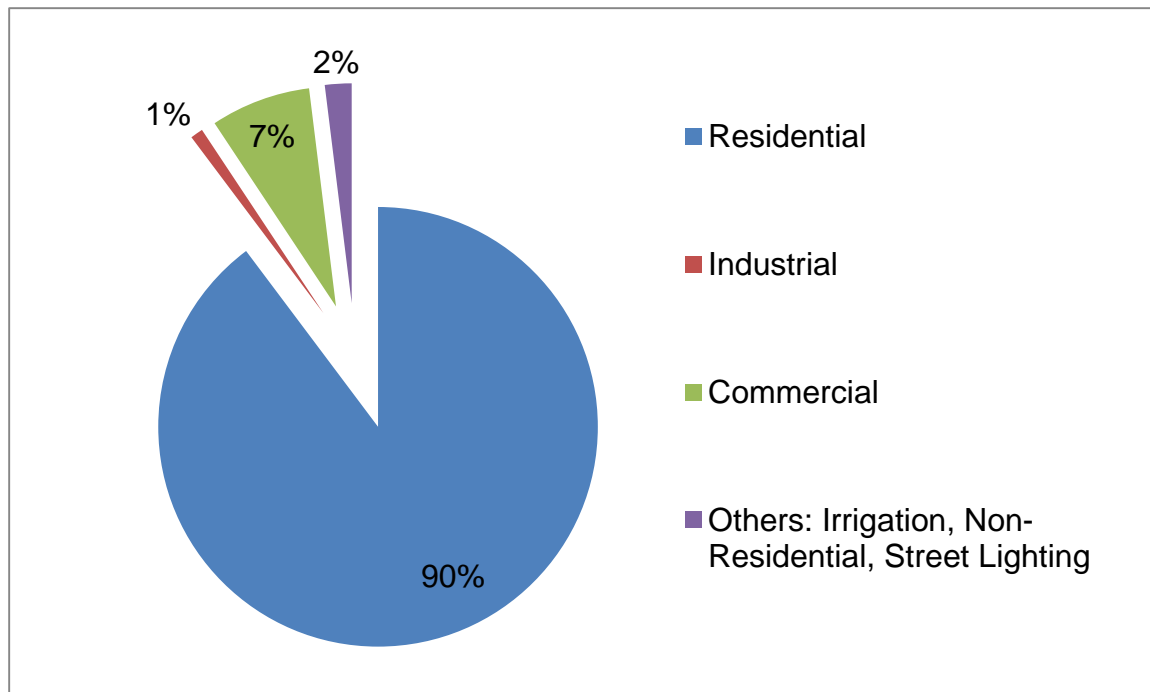
4.3 DESCO Customer Profile³

54. DESCO's consumer based is summarized in Table 4.2 and presented in Figures 4.3 and 4.4. Residential comprise almost 90% of total accounts and about half of total consumption. Industrial consumers account for less than 1% of accounts but more than one-third of consumption.

Table 4.2: Consumers by Category and Consumption

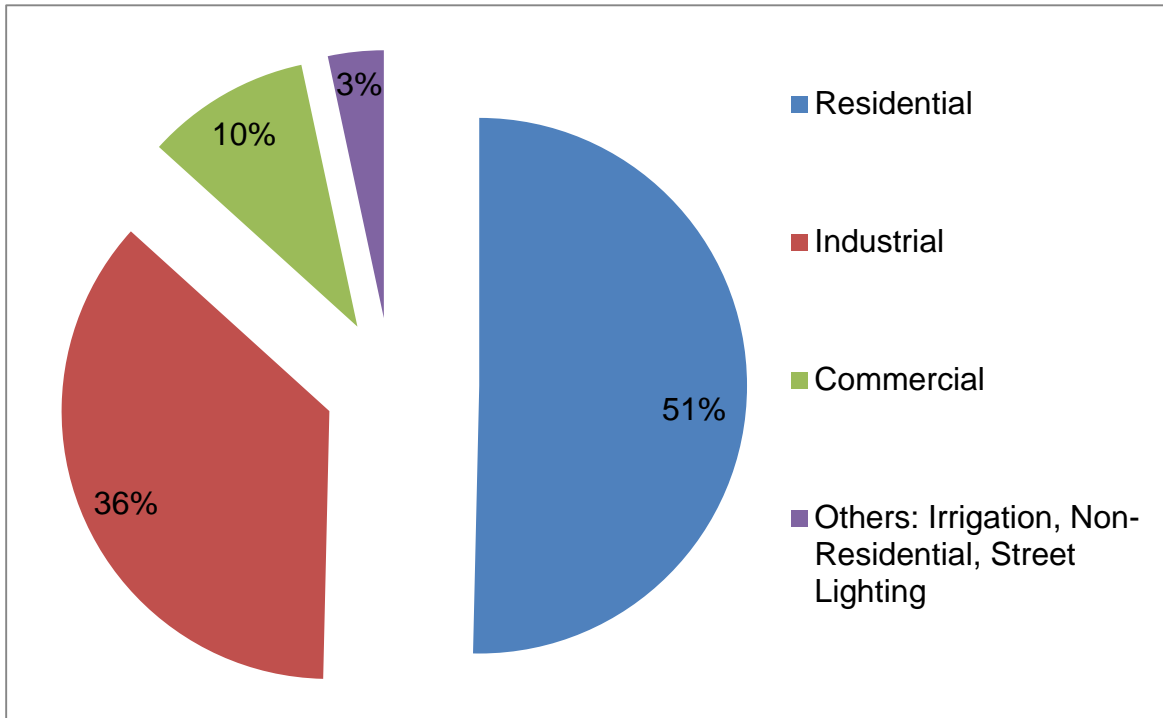
Consumer Category	Number	% of Total	Consumption (MWh)	% of Total
Residential	6,45,712	89.76%	1993.03	50.37
Industrial	6,428	0.93%	1443.67	36.34
Commercial	53,575	7.36%	398.09	9.93
Others: Irrigation, Non-Residential, Street Lighting	13,518	1.96%	124.67	3.36

Figure 4.3: Number of Consumers by Category



³ Since the project will benefit a large number of DESCO customers, the consumer profile is presented instead of traditional socio-economic survey.

Figure 4.4: Energy Consumption by Category



5. Potential Impacts and Mitigation Measures

5.1. Introduction

55. Distribution systems are generally considered to be “non-polluting” in the sense that there are no emissions of air pollutants, wastewater, or solid wastes associated with routine operations, other than domestic wastes from larger substation operations with human operators present on a regular basis, including domestic wastewater and solid wastes. The potential impacts of the project are limited to the construction period and arise from equipment staging, dismantling and removal of existing equipment and installation of new equipment at the substation sites, and trenching and cable installation for the distribution lines. The equipment at the existing substations and about 80% of the existing overhead distribution lines will be re-deployed in other installations. Residual equipment and materials which can not be reused will be recycled and disposed following established DESCO procedures. The anticipated impacts are localized, minimal, temporary, and reversible, and can be readily mitigated using well know methods. The potential impacts are illustrated conceptually in Figure 5.1, showing possible pollutant sources, pathways, and receptors. Potential impacts and mitigation measures are summarized in Table 5.1 and discussed below. After construction is complete the project will provide improved power supplies and improved public safety due to burial of distribution lines.

Figure 5.1: Schematic of Potential Impacts

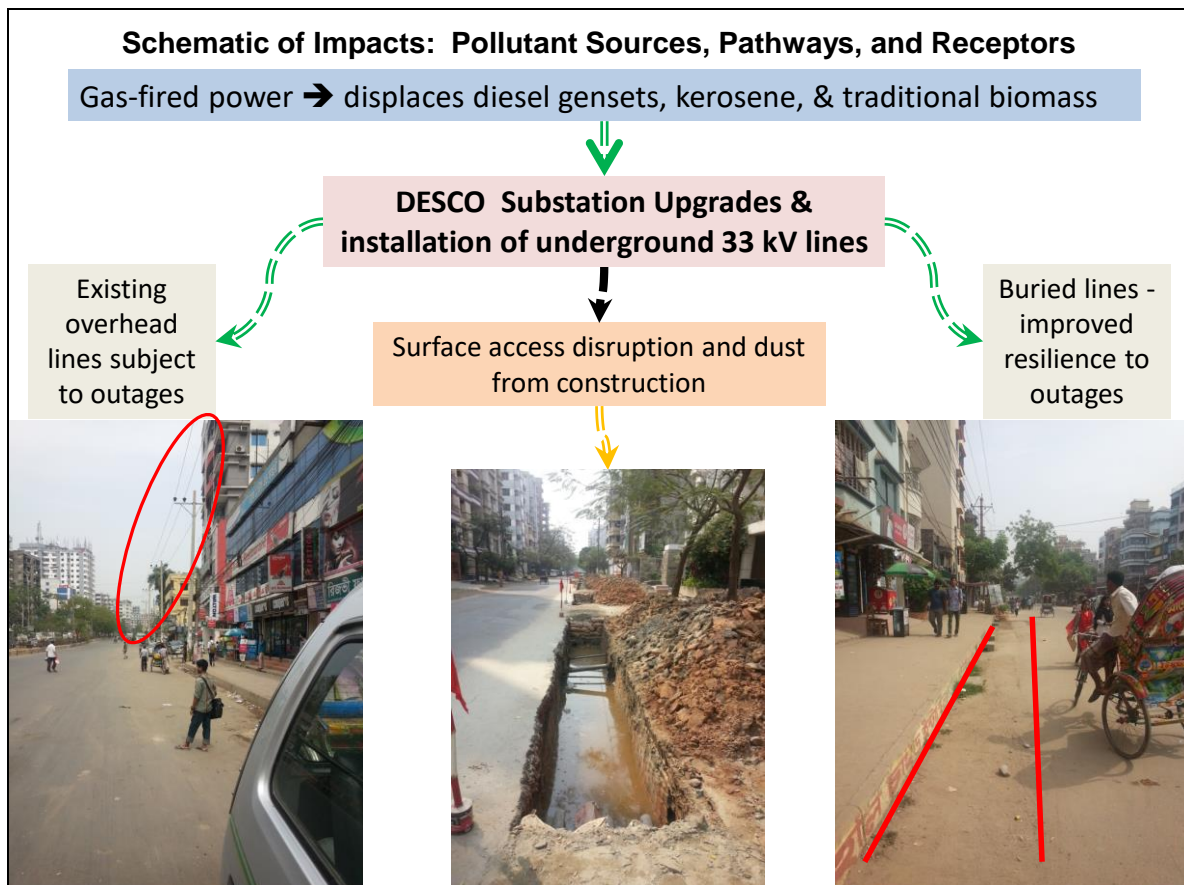


Table 5.1: Potential Impacts and Mitigation Measures

Parameter	Baseline Condition	Potential Impacts and Mitigation Measures		
		Pre- construction	Construction	Post- construction
Potential surface disruptions and related social impacts, including disrupted access to buildings and potential local disruption to surface drainage	Some areas are built up and congested. Some area may be prone to seasonal flooding	No impact related to substations. Engineering survey will be conducted to identify final routing to minimize disruption and impacts including management of local surface drainage.	No impact at substations aside from minor traffic disruption during equipment delivery and removal. Minor temporary disruption during trenching and line installation. Mitigation: Schedule construction to minimize time required for trenching, line installation, and backfilling. Provide advance notice to affected stakeholders. Provide temporary bridging material or load-bearing covers over active trench sites (see Figure 5.3).	No impact: Fill materials will be properly compacted and road surfaces will be restored to proper design standards.
Noise	Normal Ambient noise standards may be exceeded due to existing traffic.	Large equipment transport in and out of substation sites can be scheduled during night-time to minimize traffic disruption.	Noise quality may deteriorate slightly due to transport of large equipment in and out of substation sites. Mitigation: construction equipment will meet national noise standards.	Noise level will not increase at substation boundaries. No noise from buried distribution lines.
Ambient air quality	Poor air quality throughout the Dhaka urban area due to vehicle and industrial emissions and open burning of solid wastes.	Project design will minimize incremental air emissions caused during construction and operational stages.	Incremental emissions due to (i) transport of materials to the project sites and (ii) soil excavation and backfilling Mitigation: Construction equipment will meet national emissions standards. Use water spray to minimize dust at trenching sites.	Improved electricity supply will reduce need for backup generators. Emissions from industries, traffic, and solid waste will require further intervention by other government agencies.
Interference with railway and road crossings	Railway and road crossings are congested during most of the day.	Number of crossings of railways and major roads minimized by route selection for distribution lines.	Some disruption due to trench excavation. Burial of lines will reduce potential interference. Mitigation: Thrust jacking, horizontal drilling, or other trenchless technology will be considered for potential use in congested areas to avoid and minimize disturbance.	Potential interference due to overhead lines will be eliminated.
Access to buildings, walkways,	Impacted due to pedestrian	Minimize impact of trenching with appro-	Open trenches will cause temporary and limited disruption during construction	Access will be re-

Parameter	Baseline Condition	Potential Impacts and Mitigation Measures		
		Pre- construction	Construction	Post- construction
and road surface	traffic, non-motorized vehicles, and mobile vendors.	appropriate design standards, construction procedures, and contract specifications.	<p>Mitigation: Schedule construction to minimize total time required for trenching, line installation, and backfilling.</p> <p>Build temporary bridging over trenches or use metal covers over trenches as necessary (see Figure 5.3). Provide advance information to potentially affected parties in advance and during construction.</p>	construction conditions.
Construction wastes	Minor domestic waste generation at substations.	No impact as staffing levels at substations will not increase.	<p>Disposal of used equipment and materials could cause soil and/or water pollution.</p> <p>Mitigation: transformers will be redeployed at other substation sites; ~ 80% of old ACSR conductors will be redeployed on 11 kV lines. Other equipment and materials will be stored at designated DESCO sites; metal materials can be recycled off-site through established procedures.</p>	No impact as staffing levels at substations will not increase.
Human safety	<p>Substations are overloaded.</p> <p>Overhead lines pose potential safety risks and are a visual eyesore.</p>	<p>Increased substation capacity will minimize risk of operational failures.</p> <p>Burial of lines will improve safety.</p>	<p>Limited and temporary impacts during transport of large equipment in and out of substation sites, and during trenching for line installation.</p> <p>Mitigation: Schedule construction to minimize time required for trenching, line installation, and backfilling. Transport of large equipment in and out of substations may be scheduled at night to minimize disruption to pedestrians and traffic.</p>	No negative impacts: safety will be improved. Access to substations will continue to be restricted to authorized personnel. Distribution lines will be buried.
SF ₆ gas management	DESCO has used SF ₆ in some substations since 2006; recharging of gas has not been required.	Technical specifications for gas insulated switchgear (GIS) limit leakage to 0.1% per year. Operational performance to date indicates this specification can be readily met.	<p>Potential for leakage due to mishandling of equipment</p> <p>Mitigation: Contract specifications will be consistent with international best practices; contractors must have demonstrated experience with SF₆ installations</p>	<p>-Occupational exposure to fugitive emissions</p> <p>Mitigation: Monitoring of equipment and inventory control will be conducted in accordance with best management practices.</p>

Parameter	Baseline Condition	Potential Impacts and Mitigation Measures		
		Pre- construction	Construction	Post- construction
Employment opportunities and economic development	Indirectly limited by power supply and access to electricity.	No direct impact – project design is for distribution system efficiency improvement and capacity expansion.	Positive impact due to temporary employment opportunities with construction contractors including technical and non-technical work	Positive impact as improved power supply supports economic growth and new employment opportunities.

Source: DESCO.

Pre-construction and Design Phase

56. Principle activities to be conducted prior to construction include the feasibility study and other in-house study undertaken by designated technical staff, and securing of relevant site and environmental clearance. For the distribution lines, an engineering consultant will be hired to conduct detailed line surveys and identify the final routing for each segment. Congested areas such as major roads and areas around railway stations (e.g., for segments near the Dhaka airport) will be avoided if possible to minimize traffic disruptions and other surface disturbances including access to buildings. In some congested areas, thrust jacking, horizontal drilling, or other trenchless construction techniques will be employed to avoid surface disruption.

57. DESCO will secure access to the proposed route for each segment from the Dhaka (North) City Corporation. The allowance for road cutting and installation includes a specific time period during which construction is expected to be completed.

58. The preconstruction activities involve desktop planning and walk-over surveys and outreach to consumers, local businesses, and other stakeholders. The project design minimizes potential impacts.

Construction Procedures and Activities

59. The main activities for the substation upgrades are straightforward. The existing transformers to be replaced will be dismantled and re-deployed at other substations with smaller capacity requirements. The dismantling and re-deployment/relocation will require about 4 truckloads of equipment and material per transformer. Installation of the new transformers and associated equipment will also require about 4 truckloads of shipments into each substation. All construction activities will occur inside the boundaries of the existing substations. The transport of equipment and materials will require a maximum of 20 truckloads; with two truckloads taking 1 day, transport of major equipment and materials will require 10 days. Potential disruption to traffic cannot be eliminated completely, but will be minimized by scheduling transport during night-time or other hours when traffic flow is at minimum.

60. The activities to be undertaken for 33 kV lines include:

- Establishment of temporary access to RoW, in sub-segments of 500 m to 1000 m
- Set up of safety markers and temporary material stockpiles
- Transport of materials and equipment to temporary work sites
- Trenching, conductor installation, and backfilling, which normally requires 15 -21 days per sub-segment
- Testing and commissioning of equipment

61. Construction of the 33 kV lines requires excavation of a trench with 1.25 m depth and 1.0 m width. Excavated soil is temporarily stockpiled on one side of the trench. The bottom of the trench is backfilled with 10 centimeters (cm) of sand as foundation for the cables. Cables are then placed on the sand layer and covered with additional 10 cm of sand. The trench is then backfilled with previously excavated earth, then covered with a reinforced cement concrete (RCC) slab which is marked with line voltage. The construction is depicted in Figures 5.2 and 5.3, which are taken at an active site near the Bushandara substation. The “before, during, and after” situation is illustrated above in Figure 5.1.

62. In locations where “hard” infrastructure such as railway lines must be crossed, trenching is not possible. In these locations, thrust jacking or drilling is utilized to allow installation of piping (usually PVC), followed by installation of cables inside the piping. As noted above, routing will be determined by a detailed engineering survey to avoid congested areas, minimize surface disturbances, and identify segments where trenching will not be possible. The final routing plan will identify any areas where construction will require special techniques to avoid railway crossings, major roads, dense commercial development or settlement, and other areas where surface access may cause temporary social disruption. Contractors will prepare a construction work plan in advance of activities which will be reviewed and endorsed by DESCO PMU. The construction work plan(s) will take into account the routing plan for underground 33 kV lines so that surface disruption and social impacts are avoided and minimized.

63. The underground cables will follow the road easements (see Figure 5.1). Vegetation clearing will not be required except in some areas where vegetation has overgrown into the roadway. Construction will be scheduled to expedite completion and minimize disruption to traffic, commercial buildings and residences, and other livelihood activities of local people.

64. Usable and/or recyclable materials and equipment will be transported to the central storage of DESCO in Mirpur for resale or auction. The central storage is divided into 11 warehouses and materials and equipment are stored according to use and potential reuse. Scrap materials are auctioned off on a regular basis.

Figure 5.2: Underground construction of 33 kV lines showing temporary material stockpiles and safety markers. Stockpiled RCC slabs, which are placed on back-filled trenches, are visible in the foreground.





Figure 5.3: Underground construction of 33 kV lines. PVC piping is visible, covered by sand bags and temporary structural support under driveways. Backfilled trenches are visible in the background



5.2. Potential Impacts and Mitigation Measures During Construction

5.2.1. Drainage Disruption

65. There will be no changes in the basic layout of the sub-stations sites, and no change in drainage conditions during construction. Hence, there are no impacts to be mitigated. Trenching will cause temporary disruption along roadways, but the effect is that trenches will tend to fill with any runoff water; this will actually help to minimize dust from earthworks.

5.2.2. Ambient Air Quality and Noise

66. As noted in Section 4, the project components are all located in the greater Dhaka urban area which has degraded air quality and noise pollution due to traffic. Potential increase in suspended particulate matter and vehicular emissions arising from construction vehicles usage represents a minor temporary increase above background levels.

67. As noted above, transport of major equipment in and out of substations will require a total of 20 truckloads, with 2 truckloads per day (10 days total) spread over several weeks. Given that there are thousands of vehicles active in the project area, the incremental vehicle emissions and noise will not be noticeable. In fact, it is unlikely that ambient air and noise monitoring would be able to detect and quantify any increase above background levels. The approach to minimize the disturbance during construction will be applied as follows:

- (i) Contractor(s) will be required to maintain construction vehicles regularly to minimize the contribution of vehicular emissions and noise.
- (ii) Trucks that will transport construction materials will be covered if necessary to minimize dust dispersion.
- (iii) Transport of materials in and out of substation sites will be scheduled during off-peak hours to minimize traffic disruption. Likewise, transport of equipment and materials to and from trenching sites will be scheduled to minimize traffic disruption.
- (iv) Water sprays will be used for dust suppression at all sites as necessary.
- (v) Trench excavation and underground cable installation will be scheduled to expedite completion and minimize air and noise emissions.

5.2.3. Interference with Railway and Road Crossings

68. Major road and railroad crossing sites may be temporarily impacted. Special construction procedures such as thrust jacking or short-reach horizontal drilling will be used to place conductors beneath such crossings without disruption to the surface. Other trenchless techniques will also be considered to avoid and minimize surface disruption.

5.2.4. Access to Buildings, Walkways, and Roads

69. Equipment and material stockpiling and excavated materials (mainly asphalt, soil, and bricks) may create temporary disturbance in the active trenching areas. The impacts will be minimized by limiting stockpiling within 1 meter on either side of trenches, providing temporary cover over trenches to allow pedestrian and vehicle traffic in and out, and scheduling work to expedite completion in busier areas.

70. The required trenching may cause temporary disruption of access to areas and buildings adjacent to the roads, as well as to mobile vendors who operate along roadsides. Restriction of access can be mitigated during construction by various engineering solutions, such as (i) leaving spaces for access between mounds of soil, providing walkways and metal

sheets across trenches to maintain access for people and vehicles where required, (ii) increasing construction workforce in congested areas to complete installation as fast as possible, (iii) timing of works in congested areas, including night time work, to reduce disruption during business hours, and (iv) using horizontal directional drilling or similar methods in highly congested areas to avoid trench digging altogether. As noted above (paragraph 56), an engineering survey will be conducted to identify final routing, which will indicate where trenching may not be feasible.

71. In order to minimize surface disruption, DESCO should consider allowing contractors to use alternatives to trenching, if such alternatives facilitate more rapid and less costly construction. In any case, the construction contract could include incentives for expediting completion with minimum surface disruption. DESCO contracts normally include a provision for compensation for interruptions caused by construction, e.g., cutting a telephone line or internet cable.

5.2.5. Construction Wastes

72. Waste generation is minimized by design. Existing transformers will be re-deployed at other DESCO substations with lower capacity requirements. The existing transformers were procured and installed during the last 20 years, and all use mineral oil.

73. Existing distribution lines will also be redeployed: about 80% of the overhead ACSR “Merlin” conductors can be used on 11 kV lines; the existing 400 mm² copper conductors can also be used on other installations. Equipment and materials which cannot be reused will be stored at designated DESCO sites, and recycled⁴ or disposed off-site following existing procedures. Excavated soil will be used to refill trenches, so there will be no net waste generation resulting from cable burial.

5.2.6. Human Safety

74. As described above, the potential impacts from construction are mainly related to disruption of traffic and dust emissions; these can be minimized and mitigated in a straightforward manner. The other potential impact of concern is human safety, which was one of the most important issues identified during stakeholder consultations (see Section 7). Vehicle traffic around substations during equipment movement and disruption to surface access around active trenching areas present the most concern. In both cases, impacts can be minimized by scheduling to expedite completion of works. Good practice safety measures will also be applied, such as construction warning signs, temporary fencing or barricades. Advance notice will be given to residents and commercial establishments before construction commences through DESCO’s routine procedures including newspaper advertising, leaflets, notices included with consumer bills, and day-before announcements with microphone and loudspeakers. Construction contractors will implement good practices through construction work plans and worker health and safety programs.

5.2.7. Management of SF₆ Gas

75. SF₆ is used as an insulator and electric arc arrester in electrical equipment such as lightning arrester, high voltage circuit breakers, transformers, and switches/switchgears. SF₆ is a potent greenhouse gas with a global warming potential 23,900 times that of CO₂. It is inorganic and non-toxic but does require special care in handling during installation and operation. There is potential for SF₆ to leak during installation and operation phase: the

⁴ Metals can be recycled in existing recycling facilities in Bangladesh.

standard fugitive emissions rate is 0.1% per year.⁵ Most GIS vendors provide a warranty or similar assurance that the SF₆ will last for the design lifetime. Given its global warming potential, release or leakage of SF₆ into the atmosphere should be minimized and monitored.

76. Gas leakage may occur due to poor gas handling practices during equipment installation and maintenance. Leak sources will be identified in a timely manner using handheld leak detector and monitoring of SF₆ level will be monitored regularly. To determine the baseline concentration, data on existing SF₆ containing equipment being used will be collected in an annual inventory. Monitoring of SF₆ level will improve the preventative maintenance procedures in DESCO facilities and will enhance awareness of staff to potential sources of GHG emissions.

77. As part of the operating procedures, the substation operators will monitor SF₆ pressure in active switchgear and will maintain inventory control on amount of SF₆ purchased and consumed. GIS switchgear includes pressure gauges for monitoring. The inventory will be continuously updated upon purchase and retirement of these cylinders and equipment in order to track the movement of SF₆ in and out of the GIS substations. As part of the inventory, the following will be reported:

- (i) Start of the year – the number of fully-charged cylinders (not equipment) and the amount of SF₆ contained in each cylinder;
- (ii) End of the year – the number of fully-charged cylinders (not equipment) and the amount of SF₆ contained in each cylinder;
- (iii) Monthly purchases and acquisitions of SF₆ – includes purchases of cylinders and equipment with SF₆ within the equipment, and SF₆ returned for off-site recycling (i.e., the supplier receipts and QA/QC certificates will be the basis of the amount of SF₆ (in kg) entering the substation);
- (iv) Sale and disbursements of SF₆ – includes those sold and disposed cylinders and equipment (if any) with residual SF₆ contained within the equipment, and SF₆ sent for off-site recycling; and
- (v) Change in equipment nameplate capacity – the nameplate capacities of retired and new equipment will be recorded.

5.2.8. Employment Opportunities and Economic Development

78. Construction contracts will be tendered through international competitive bidding, and contractors are expected to take advantage of locally-available labor. Employment opportunities have not been quantified but construction will require both skilled and non-skilled laborers. Construction crews are expected to take advantage of locally available services, such as food and drink vendors. Improved power supplies resulting from the project will support overall economic development in accordance with the GoB objective of providing electricity for all by 2021.

5.3. Cumulative and Induced Impacts

79. The project is being induced by electricity demand growth rather than vice versa. Residential consumers account for the largest portion of accounts, but only about half of total consumption. Residential and commercial consumption is mainly for lighting, refrigeration, air

⁵ A typical GIS installation will have about 1 ton of SF₆ per substation. Assuming the 0.1% per year leakage rate and global warming potential, each substation may emit about 23.9 tons CO₂ equivalent per year. According to DESCO personnel, GIS has been in use since 2006, and no units have required recharging of SF₆ gas.

conditioning, and other appliances. The long-term environmental impacts will be determined mainly by rational landuse planning, zoning enforcement, traffic management, and expansion of water, sanitation, and solid waste management services. The primary mitigating factors are land use planning (e.g. industrial estates), and enforcement of existing EIA and environmental management regulations.

6. Environmental and Social Management Plan

6.1. Mitigation and Monitoring Plan

80. The proposed mitigation and monitoring plan is summarized in Table 6.1 (see next page).

6.2. Responsibilities for Mitigation, Monitoring, Reporting, and Review

DESCO

81. DESCO is responsible for developing and implementing a corporate EHS program and applying it at the project level. DESCO have assigned staff to a Project Management Unit (PMU) which will be responsible for overall project implementation including the ESMP. The PMU will ensure that bidding documents include criteria for environmental and social requirements and environmental certification criteria (if any). DESCO will be responsible for redeployment, secure storage, and ultimate disposal of used equipment and materials.

82. DESCO will retain a qualified engineering consultant to identify optimum routing for underground distribution lines. DESCO will be responsible for confirming that the underground line routes are within the existing roadways and will avoid or minimize social disruption. The resulting line construction plan will be a key input into bid documents and will be incorporated into the overall ESMP.

83. The PMU will prepare an ESMP progress report 2 times per year during construction and once during the first year of operations, and submit these to AIIB for review. The reports will cover EMP implementation with attention to compliance and any needed corrective actions.

Engineering and Construction Contractors

84. A qualified engineering firm will conduct the necessary surveys for optimum routing which avoids or minimizes disturbance during construction. The survey will identify, to the extent feasible, routes with potentially the most limited construction impacts. The final routing plan will identify any areas where construction will require special techniques to avoid railway crossings, major roads, dense commercial development or settlement, and other areas where surface access may cause temporary social disruption.

85. Construction contractor(s) and other any suppliers are expected to have a corporate environmental, health, and safety (EHS) policy; environmental management certifications such as ISO 14001 (or equivalent) would be an additional qualification. Contractors will be provided with the project IEE and ESMP and may propose revisions, if necessary, to the ESMP in consultation with DESCO and AIIB. Contractors will have primary responsibility for workers' health and safety, including provision of appropriate personal protective equipment (e.g., hard hats, safety boots, and hearing protection), and controlled management and disposal of any construction-related wastes. Contractors will prepare a construction work plan in advance of activities which will be reviewed and endorsed by DESCO PMU. The construction work plan(s) will take into account the routing plan for underground 33 kV lines so that surface disruption and social impacts are avoided and minimized.

Table 6.1: Mitigation and Monitoring Plan

Impact / Parameter / Activity	Mitigation /Related Activity	Monitoring / Related Activity	Schedule / Timing	Budget (BTK)	Responsible Agency(ies)
Project Disclosure	<p>The draft IEE and ESMP will be disclosed on the DESCO website in English and Bengali, also on the AIIB website. A public stakeholder meeting including other government agencies and concerned stakeholders will be held after disclosure.</p> <p>If the IEE and ESMP are revised, the updated documents will be posted on the websites.</p> <p>Monitoring reports required under the IEE and ESMP will be disclosed following DESCO and AIIB procedures.</p>	<p>DESCO to organize public disclosure meeting including relevant government agencies and other stakeholders.</p> <p>IEE and ESMP to be made available for discussion at monthly public meetings at S&D centers during implementation process.</p>	<p>Disclosure of IEE and ESMP by DESCO and AIIB consistent with their procedures.</p> <p>A minimum of 10 working days advance notice will be made prior to the public consultation meeting.</p> <p>Timing of meetings at S&D centers, to include the ESMP, will be at normal intervals used by DESCO.</p>	Included in DESCO and AIIB operating budgets.	DESCO and AIIB. DESCO project manager, Director Engineering, and managers of S&D centers.
Notification of construction activities	<p>DESCO will prepare a 1-page information notice (Bengali and English) and distribute to DESCO consumers via inclusion with monthly bills at least 15 days before construction. The notice will include:</p> <ul style="list-style-type: none"> (a) project description, (b) implementation schedule, (c) expected impacts and benefits, and (d) complaints and grievances procedures. <p>DESCO will post the 1-page information notice at each of its S&D centers, and distribute the notice at the monthly public meetings.</p>	Information notice to be provided to attendees at monthly public meetings at S&D centers, and posted at S&D complaint windows.	<p>Monthly meetings at S&D centers.</p> <p>Notification by mail 15 days in advance before construction activities commence.</p> <p>Neighborhood announcements by microphone and loudspeaker (“miking”) one day in advance of activities.</p>	Included in DESCO operating budget.	DESCO project manager and managers of S&D centers

Impact / Parameter / Activity	Mitigation /Related Activity	Monitoring / Related Activity	Schedule / Timing	Budget (BTK)	Responsible Agency(ies)
Grievance Redress Mechanism	DESCO to organize (see discussion in main text section 6.3)	Regular meetings of Committee. The Committee may elect to hold monthly meetings at DESCO S&D centers.	Monthly	200,000 (lump sum, based on other project experience).	DESCO project management unit and relevant government agencies and civil society.
Routing of 33 kV underground lines	Engineering consultant to conduct detailed survey and determine final routing to minimize impacts during construction. The engineering survey will provide the basis for determining where trenching is not feasible, i.e., where thrust jacking, horizontal drilling or other trenchless technology will be used for installation of underground lines.	DESCO to confirm routing is most appropriate and will minimize surface disruption and related social impacts. Final routing to be incorporated into information provided to consumers and stakeholders who may be affected during construction.	Survey to be completed prior to finalization of bid documents and tendering. Details on routing to be made available to consumers and stakeholders through monthly billing statements, posting at S&D centers, and via monthly meetings at S&D centers.	Cost of survey to be determined through competitive bidding. Estimate to be provided by DESCO.	Engineering consultant under supervision of DESCO project management unit. DESCO project management unit.
Procurement	Bid documents to include relevant specifications for environmental and social impact management based on IEE and other government regulatory requirements.	AIIB to review draft bid documents. Contractors to prepare health and safety plans for review by DESCO and AIIB prior to construction.	Draft Bid documents to be reviewed prior to tendering. Health and safety plans to be reviewed prior to construction start.	Included in AIIB and DESCO operating budgets.	DESCO to prepare bid documents. AIIB to review and provide no objection prior to tendering. Contractors to prepare Health and Safety plans.
Construction Management Plans	Contractors to prepare construction management plan covering: worker and public health and safety, including provisions for first aid and access to closest medical treatment facilities, traffic control and management, staging	DESCO to review and ensure consistency with good engineering practices.	DESCO review and concurrence prior to start of construction.	Included in contractors budget.	Contractors are responsible for preparing plans. DESCO project management unit is

Impact / Parameter / Activity	Mitigation /Related Activity	Monitoring / Related Activity	Schedule / Timing	Budget (BTK)	Responsible Agency(ies)
	of equipment and materials, vehicle maintenance, and noise and dust control.				responsible for review and concurrence.
Potential surface disruptions and related social impacts, including disrupted access to buildings and drainage disruption	<p>Engineering survey will be conducted to identify routing of underground lines so that construction impacts are avoided and minimized.</p> <p>Schedule construction to minimize time required for trenching, line installation, and backfilling.</p> <p>Install temporary bridging or use metal covers over trenches as necessary to minimize surface disruption and access to buildings</p>	<p>DESCO to incorporate engineering survey results into bid documents and IEE / ESMP.</p> <p>DESCO to review of construction plans prepared by contractor for consistency with requirements imposed by Dhaka City Corporation.</p>	<p>DESCO review of construction schedule before start of construction, with additional review based on progress.</p> <p>DESCO to provide advance notification to consumers and stakeholders through monthly bills, notices and public meetings at S&D centers 15 days prior to construction.</p>	Included in contractor's budget and DESCO operational budget.	<p>DESCO to ensure that contract specifications are included in bid documents. AIIB to confirm and provide no objection.</p> <p>Contractor to implement.</p>
Noise	<p>Construction equipment will meet national noise standards noise.</p> <p>Contractors to provide noise protection to workers as appropriate.</p> <p>Ambient noise levels are expected to overwhelm the construction activities, rendering traditional noise abatement procedures useless.</p>	<p>Spot checks to ensure that contractors meet specifications and that workers are provided with protective gear</p>	<p>DESCO project manager to check contractor documentation before construction commences.</p> <p>DESCO to conduct spots checks on monthly or more frequent basis during first 6 months of activities.</p>	Included in contractor's budget and DESCO operational budget.	<p>DESCO to ensure that relevant contract specifications are included.</p> <p>Contractors to verify that equipment meets national standards. Noise protection to be included in contractor health and safety plans.</p>
Ambient air quality and noise level	All vehicles, equipment and machinery to be used should comply with the relevant standards norms.	Visual spot checks during movement of large equipment in and out of substations	DESCO project manager to check contractor documentation before construction commences.	Included in contractor's budget and DESCO operational budget.	DESCO to ensure that contract specifications are included Contractors to verify that equipment

Impact / Parameter / Activity	Mitigation /Related Activity	Monitoring / Related Activity	Schedule / Timing	Budget (BTK)	Responsible Agency(ies)
	Water spray will be used on trenching sites as necessary for dust suppression.	Spot checks during trenching operations on monthly basis	DESCO to conduct spots checks on monthly or more frequent basis during first 6 months of activities.		meets national standards.
Interference with railway and road crossings	<p>Thrust jacking or similar horizontal drilling under railways, major road crossing, and other congested areas will be utilized to avoid and minimize surface disturbance.</p> <p>Warning signals and temporary construction barricades to be provided in congested areas during movement of large equipment for substations.</p> <p>Barricades and warning signals to be used along all active trench sites.</p>	DESCO to conduct spot checks during construction.	Spot checks on monthly basis or more frequently based on construction schedule.	Included in construction contract.	DESCO
Access to buildings, walkways, and roads	<p>Schedule construction to minimize total time required for trenching, line installation, and backfilling. Use temporary sheet metal covers over trenches as necessary.</p> <p>Use thrust jacking, horizontal drilling, or other trench-less techniques to avoid and minimize surface disturbance.</p>	<p>Construction contractors to utilize temporary warning signs and barriers and ensure that access to buildings is maintained in a safe manner.</p> <p>Visual inspections by DESCO.</p>	Inspections on a weekly basis during first 3 months of construction, and on a monthly basis after that.	300,000 (lump sum, based on other project experience).	Construction contractors and DESCO project management unit.
Construction wastes	Transformers will be redeployed at other substation sites; ~ 80% of old ACSR conductors will be redeployed on 11 kV lines. Other equipment and materials will be stored at designated DESCO sites; metal materials can be recycled off-site through established procedures	Inventory control for tracking of equipment following established DESCO procedures.	Documentation of inventory movements based on construction schedule. At minimum, a summary should be able for review 2 times per year.	Included in DESCO operational budget.	DESCO

Impact / Parameter / Activity	Mitigation /Related Activity	Monitoring / Related Activity	Schedule / Timing	Budget (BTK)	Responsible Agency(ies)
Human Safety	<p>Pre-construction consultation in neighborhoods around substations and along 33 kV alignments.</p> <p>Publish notices in newspapers 1 week in advance of activity; distribute leaflets 1 week in advance. Loudspeaker announcements the day before construction commences.</p> <p>Schedule construction to minimize time required for trenching, line installation, and backfilling. Transport of large equipment in and out of substations may be scheduled at night to minimize disruption to pedestrians and traffic.</p>	<p>Contractors and DESCO to maintain documentation of consultation and other public information activities.</p> <p>Construction contractor to conduct regular health and safety briefings.</p>	<p>Advance notification to consumers and stakeholders at least 1 week in advance of activity, and loudspeaker announcement the day before construction commences.</p> <p>Summary of activities prepared on monthly basis.</p>	500,000 (lump sum).	DESCO project management unit with input from Contractors
SF6 Gas	<p>Relevant contract specifications will be consistent with international best practices; suppliers and contractors must have demonstrated experience with SF6 handling installations</p> <ul style="list-style-type: none"> -Regular monitoring of SF6 pressure gauges -Use of handheld leak detectors to monitor leaks -Prepare annual inventory checklist of SF6 consumption, purchase, and losses to track emissions - Equipment vendors and contractors provide training to staff on proper handling of SF6 	Inventory control for tracking following established DESCO procedures.	Document new SF6 inventory based on construction schedule. A summary should be available for review 2 times per year.	Included in DESCO operation cost.	DESCO project management unit and substation managers.
Cultural Resources	Provide for use of “chance find” procedures including a pre-approved management and	DESCO to prepare management and conservation approach.	Prior to construction contract award.	Contingency to be included in contract cost estimate.	DESCO project management unit.

Impact / Parameter / Activity	Mitigation /Related Activity	Monitoring / Related Activity	Schedule / Timing	Budget (BTK)	Responsible Agency(ies)
	conservation approach for cultural resource that may be discovered during construction.				

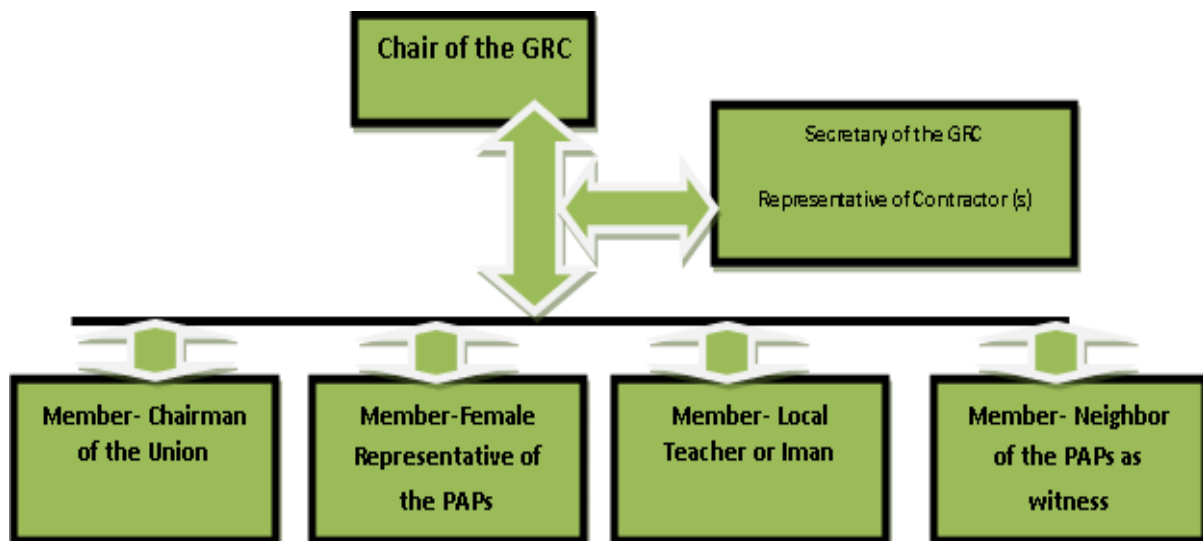
6.3. Grievance Redress Mechanism

86. DESCO will ensure that local people will have the opportunity to express their legitimate grievance or file a formal complaint about the project by establishing a process to address the issues raised. This can be achieved by careful implementation of the ESMP, continuing consultation and communication with stakeholders during implementation by the Project Management Unit (PMU), DESCO, Contractor(s), and local government authorities. Contact details of the PMU for filing complaints will be posted in the project areas.

87. A grievance redress committee (GRC) will be setup by DESCO as soon as the project commences and will ensure representation of women. Figure 6.1 shows the organization of the GRC. Additional details on project consultation and disclosure are presented in Section 7.

88. The GRC will convene once a month or more often as necessary and will keep a record of the grievances, classify, prioritize, and provide the solution (s) within 30 days from the date of the complaint. The record will include the contact details of the complainant, date the complaint was received and the nature of the complaint, agreement on corrective actions and the date it was enforced, and the final outcome. All complaint related documentation such as minutes of the meeting and decisions will be summarized and become part of the semiannual monitoring report submitted to AIIB. The GRC will report to the complainant (s) about the developments regarding their grievances and the decisions of the GRC. If the grievance is not addressed, the complainant can seek legal redress of the grievance in the appropriate courts.

Figure: 6.1: Grievance Redress Committee



7. Consultation, Information Disclosure, and Participation

89. Consultation, information disclosure, and stakeholder participation are required to ensure that adequate and timely information is made available to project beneficiaries and affected people and that these parties have opportunities voice their opinions and concerns and participate to the extent practical in decision-making about the project. DESCO has established mechanisms to inform its customers and other stakeholders about its activities, and to receive and act up customer feedback. These include: a corporate website with English and Bengali pages; 16 service and distribution (S&D) centers with one-stop service windows and a complaint center; monthly meetings at S&D centers to receive customer complaints and feedback; notification by mail 15 days in advance before construction activities commence; and neighborhood announcements by microphone and loudspeaker (“miking”) one day in advance of activities. These existing facilities, mechanisms, and procedures are appropriate for the proposed project. Additional notes on informal stakeholder engagement are presented in Appendix 1.

90. The following steps are proposed going forward for project approval and implementation:

- (i) The draft IEE and ESMP will be disclosed on the DESCO website in English and Bengali, and on the AIIB website.
- (ii) After disclosure of the IEE and ESMP on DESCO website, a consultation including other government agencies and concerned stakeholders will be convened with at least 10 working days advance notice, for review and discussion of the IEE and ESMP.
- (iii) If and when the IEE and ESMP are revised, the updated documents will be posted on the websites.
- (iv) DESCO will prepare a 1-page information notice (Bengali and English) and distribute to DESCO consumers via inclusion with monthly bills. The notice will include: (a) project description, (b) implementation schedule, (c) expected impacts and benefits, and (d) complaints and grievances procedures.
- (v) DESCO will post the 1-page information notice at each of its S&D centers, and distribute the notice at the monthly public meetings.
- (vi) Monitoring reports required under the IEE and ESMP will be disclosed following DESCO and AIIB procedures.

91. The IEE and ESMP may be revised if deemed necessary by DESCO [and AIIB] based on the detailed engineering survey which will determine final 33 kV line routing.

8. Conclusions and Recommendations

92. The DESCO Project has been designed to avoid and minimize potential environmental and social impacts. Aside from local, temporary, and reversible disruptions during construction, the project will not have any significant negative impact. The potential air quality and noise impacts are minor and probably can not be distinguished from baseline levels. Practical mitigation and monitoring measures have been identified, the most important of which is scheduling to minimize the time required for construction.

93. The proposed DESCO Project will have no residual adverse impact on the environment and will have minimal social impacts. After construction is completed, the project will generate environmental and social benefits accruing from improved electricity supplies and removal of overhead distribution lines.

94. This draft IEE includes an Environmental and Social Management Plan (ESMP) for project implementation and monitoring.

Appendix 1: Notes on Stakeholder Outreach Meeting

An initial stakeholder outreach meeting was organized by DESCO on 15 March 2016 at its Uttara S&D center. The meeting was attended by DESCO consumers from the Uttara service area and included students, business men, a retired government officer, and hotel management staff (see Figure A1.1 and Table A1.1). DESCO gave a brief overview of the project components, and overall schedule, then opened the meeting for questions and discussion. In general, all attendees were happy for the opportunity to learn about the project and participate in discussions.

Many people noted that the project is needed to improve reliability of electricity supplies, and that installation of underground cables will benefit improved public safety. Many people noted concerns about construction duration, disruption of traffic and access to buildings, and possible service interruptions during construction. There was consensus that the project will improve the quality of electricity supply, and deliver economic development benefits. One participant asked whether the project would have a positive impact on retail electricity rates; DESCO responded that since retail rates are set by the Bangladesh Energy Regulatory Commission (BERC) that it is not possible to directly link the project to future changes in retail rates. With respect to potential environmental and social impacts, attendees clearly stated that human safety was the highest concern.

Figure A1.1: Stakeholder Outreach Meeting at DESCO Uttara Service and Distribution Office, March 2016



Table A1.1: List of Participants at Uttara S&D Stakeholder Outreach Meeting

S.No	Name	Occupation / Job	Age	Education Level
1	Mr. Babul	Manager / Richmond	40	BA
2	Forhad	Senior General Manager	47	MA & MBA
3	Harun-ur-Rashid	Director / Hotel Management	50	MA
4	S.M. Nurn Nabi	Managing Director	45	MA
5	Md. Moshen		56	HSSC
6	Mr. Seemon	Administrative Manager	27	
7	Md. Ershad Ali	Assistant General Manager	55	BSC
8	Md. Abdul Kuddus	Retired government employee	56	BA
9	Fajie Rabbi	Student	23	MBA
10	Rezaul Islam	Private Service	32	BSC Engineering
11	Mohammad Arman	Business	35	BA
12	Monsour M.	Private Service	46	M. Comm.
13	Nazimul Alam	Student	21	BBA
14	Md. Sayem M.	Student	24	B.Sc.
15	Md. Faisal Faruqi	Asst. Manager (Maintenance)	33	B.SC. Mechanical
16	Md. Rifat	Engineer	28	Diploma In Electrical
17	Niaz Chowdhury	General Manager	35	M. Sc.