

Semi-annual Environmental Monitoring Report

Project No. 42378-017
June 2020

**Power System Expansion and Efficiency Improvement Investment Program-
Tranche-3
Output-2: Transmission System expanded and upgraded**

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Semi-annual Environmental Monitoring Report

Loan No : 3350-BAN

Semi-annual Report

Reporting Period : January 2020 to June 2020

Reporting Date : June 30, 2020

Loan No 3350-BAN: Power System Expansion and Efficiency Improvement Investment Program-
Tranche 3 (400/230/132 kV Grid Network Development Project)

Prepared by: (400/230/132 kV Grid Network Development Project), Power Grid Company of Bangladesh Ltd. (PGCB) for the Asian Development Bank for People's Republic of Bangladesh.

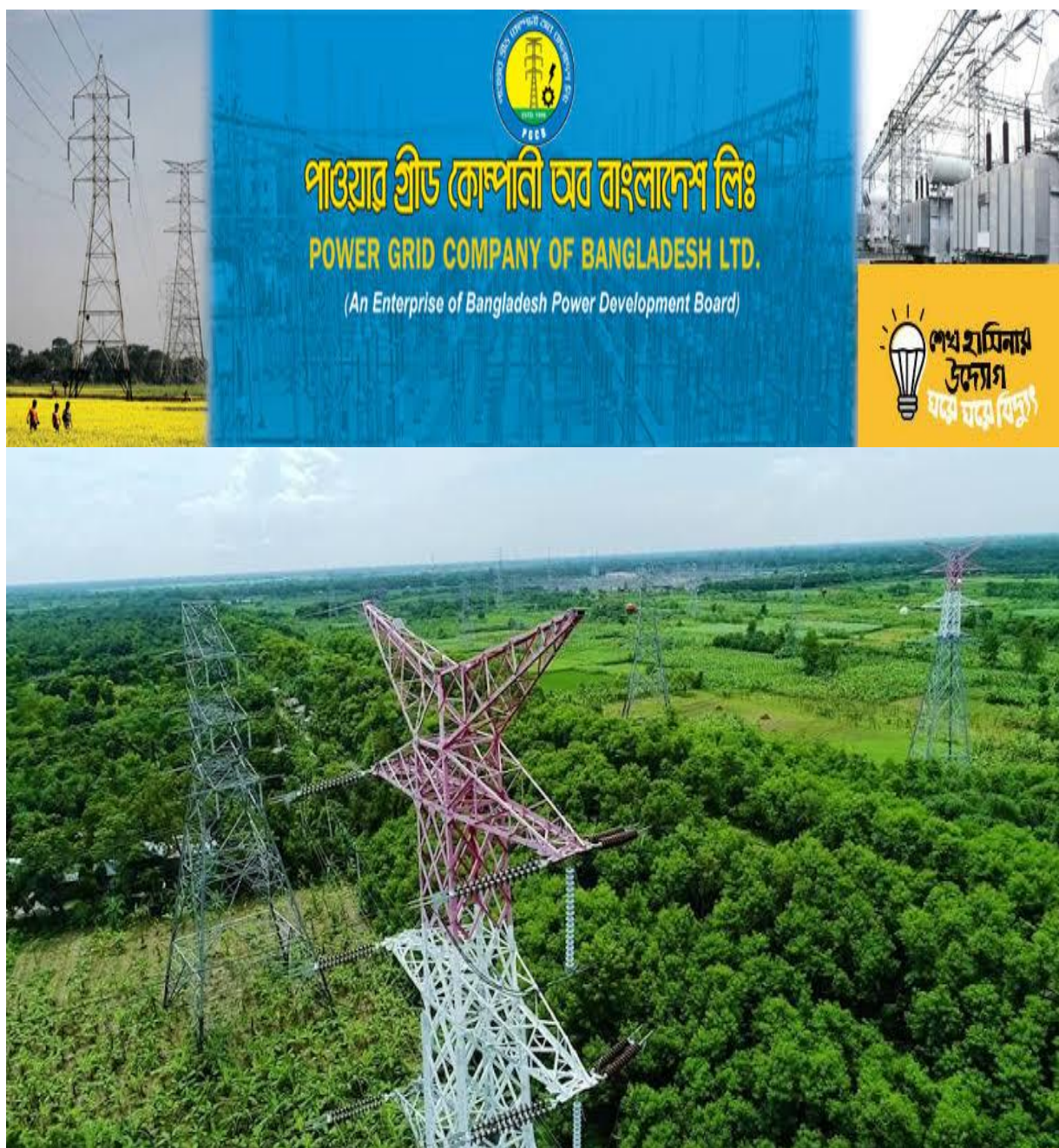


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POWER GRID COMPANY of BANGLADESH (PGCB) LIMITED
MINISTRY OF POWER, ENERGY & MINERAL RESOURCES
GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH



6th Environmental Monitoring Report

June, 2020

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❖ **Abbreviations and Acronyms**

- **ADB**-Asian Development Bank
- **WHO**-World Health Organization
- **GoB**-Government of Bangladesh
- **DoE**-Department of Environment
- **CEGIS**-Center for Environmental and Geographic Information Services
- **PGCB**-Power Grid Company of Bangladesh Ltd
- **GNDP**-Grid Network Development Project
- **BECA**-Bangladesh Environment Conservation Act
- **BECR**-Bangladesh Environmental Conservation Rule
- **HSCL**-Health & Safety Hazard Check List
- **ECR**-Environmental Conservation Rule
- **PAP**-Project Affected Persons
- **EOHS**-Environmental and Occupational Health & Safety
- **IEE**-Initial Environment Examination
- **EIA**-Environmental Impact Assessment
- **EHS**- Environment Health Safety
- **ECA**-Environment Conservation Act
- **EMP**-Environmental Management Plan
- **EPC**-Engineering, Procurement and Construction
- **TL**-Transmission Line

❖ *executive Summary*

This Social Safeguard Monitoring is conducted based on ADB safeguard's policy, the laws and policies of Bangladesh Govt. and Loan covenants between ADB and GoB. At this stage, 6th monitoring has been completed on four locations (Kachua, Kalurghat, Madunaghat and Comilla South) where sub stations are being started for rehabilitation and augmentation. The project includes construction of 4 nos. (New 2 nos. and up gradation 2 nos.) Grid substations and construction of approximately 72 km Transmission lines. "400/230/132 kV Grid Network Development Project", Power Grid Company of Bangladesh Ltd (PGCB) aims to improve provision of sustainable and reliable power supply both in Dhaka & Chittagong city and also enhance the transmission network efficiency in the two cities by Asian Development Bank (ADB) financed projects.

Based on the prepared checklist and policy standard of ADB, Bangladesh Govt. and loan covenant between ADB and Bangladesh Govt., the monitoring team observed the physical (Air quality, waste management, Noise and soil quality), Ecosystem and Biodiversity and social environmental status of the construction site qualitative and quantitative approaches.

The labors, site manager, Health and safety manager, and relevant stakeholders were consulted and different environmental and social issues like occupational health and safety and working condition status (i.e. labor shed, toilet facilities, source of drinking water, wash room, kitchen etc) and gender status, and equal opportunity for those labors were explored during this stage of the environmental monitoring.

Based on the selected parameters of air quality, the results of the air quality were checked to be satisfactory at the project site, whereas no external source of air pollution was observed that can deteriorate air quality in the project areas. During field visit, it was found that water is being sprayed every day to control fugitive dusts and other particles when earth materials become suspended.

The noise levels were measured during morning at the Kachua, Kalurghat, Madunaghat and Comilla South sites and the average noise levels were found to be 66 dB, 67 dB, 65 dB and 71 dB respectively. Waste management system at Kachua, Kalurghat, Madunaghat and Comilla (South) was relatively good. All the sites were neat and clean in terms of prevalent solid wastes. Besides, considering the overall situation been observed, there were no significant impacts on the existing vegetation and wildlife.

The working environment is good inside the sub-station; all labors use safety equipments provided by the EPC (Engineering, Procurement, and Construction) contractor. The monitoring team suggested for complying all things using safety equipment for avoiding any accidental cases during the construction activities.

❖ **1.0 Introduction**

• **1.1 Background**

1.1.1 The People's Republic of Bangladesh has scaled up its priority to strengthen the electricity production, transmission, and distribution for overall growth and development of the country. In this respect, Bangladesh Govt. has set their goal in providing access to affordable and reliable electricity for all by 2021.

1.1.2 To meet up this increasing demand, Power Grid Company of Bangladesh Ltd (PGCB) has taken initiatives to expand its infrastructure in the transmission system with the construction of the new line, substations, and renovation of existing substations. This project has already obtained the site and environmental clearance certificate from DoE and started the construction works.

1.1.3 The project should be implemented in compliance with all the applicable Environmental and Social Rules and Regulations under the Environmental Conservation Rule (ECR) 1997 of Bangladesh, Environmental and Social Management Plan and Monitoring plan described in the EIA report as well as the requirement of Project financier- Asian Development Bank (ADB).

1.1.4 A checklist has been prepared to monitor all indicators regarding national laws and policies as well as the ADB loan covenants. The EPC Contractor started construction for substations & Transmission Line locations and monitoring result identified through monthly field visit regarding the indicators fixed in the checklist.

1.1.5 Under Power System Expansion and Efficiency Improvement Investment Program -Tranche 3 of ADB, 400/230/132 kV GND Project of Power Grid Company of Bangladesh (PGCB) is executing this project. A loan agreement was signed between ADB and GoB in this regard on December 22, 2015.

1.1.6 A loan agreement was signed between ADB and GoB in this regard on December 22, 2015. The project includes construction of 4 nos. (New 2 nos. and up gradation 2 nos.) Grid substations and construction of approximately 72 km Transmission lines to improve transmission network of Dhaka & Chittagong and improve the power supply reliability.

❖ **1.2 Objectives:**

• **1.2.1 Main Objective**

The main objective of the environmental monitoring is to observe how EMP is compiled in relation with national and international standard in pre-construction, construction and operation phase of the project.

• **1.2.2 Specific Objectives**

The specific objectives of the environmental monitoring are to:

- i. Analyze the water and air quality in pre and construction phase of the project
- ii. Analyze noise in three stages of the project
- iii. Explore land characteristics in the project sites
- iv. Analyze the waste management system of concerned authority or EPC Contractor
- v. Monitor working condition and occupational health safety during project lifetime

- vi. The environmental compliance monitoring would include: Analysis of Environmental and Social Safeguarding Laws and Policies of Bangladesh. Description of Environmental and Social Management, and Monitoring Plan described in the EIA in line with ADB's requirements.

❖ 1.3 Project locations

The final list of the proposed sub-stations area mentioned in the Table 1.1.

Table 1.3.1: Proposed Substations/ Transmission Lines

<i>Sl. No.</i>	<i>Name of the substations/ Transmission Lines</i>	<i>Address</i>	<i>Remarks</i>
01	Kachua 132/33 kV, 2x50/75 MVA AIS Grid Sub-station.	Kachua, Chandpur.	
02	Kalurghat 132/33 kV, 2x50/75 MVA GIS Grid Sub-station.	Kalurghat, Chittagong.	
03	Up gradation of Madunaghat 132/33 kV AIS substation to GIS substation at.	Madunaghat, Chittagong.	
04	Up gradation of 132/33 kV AIS substation to GIS substation at Comilla(S).	Comilla South	
05	Madunaghat-Kalurghat 132 kV Double Circuit Underground Transmission Line	Madunaghat-Kalurghat	7 km
06	Re-conductoring of Existing Comilla(South)-Chandpur 132 kV Double Circuit Overhead Transmission Line	Comilla(South)-Chandpur	65 km

SITE LOCATION OF THE PROJECT:

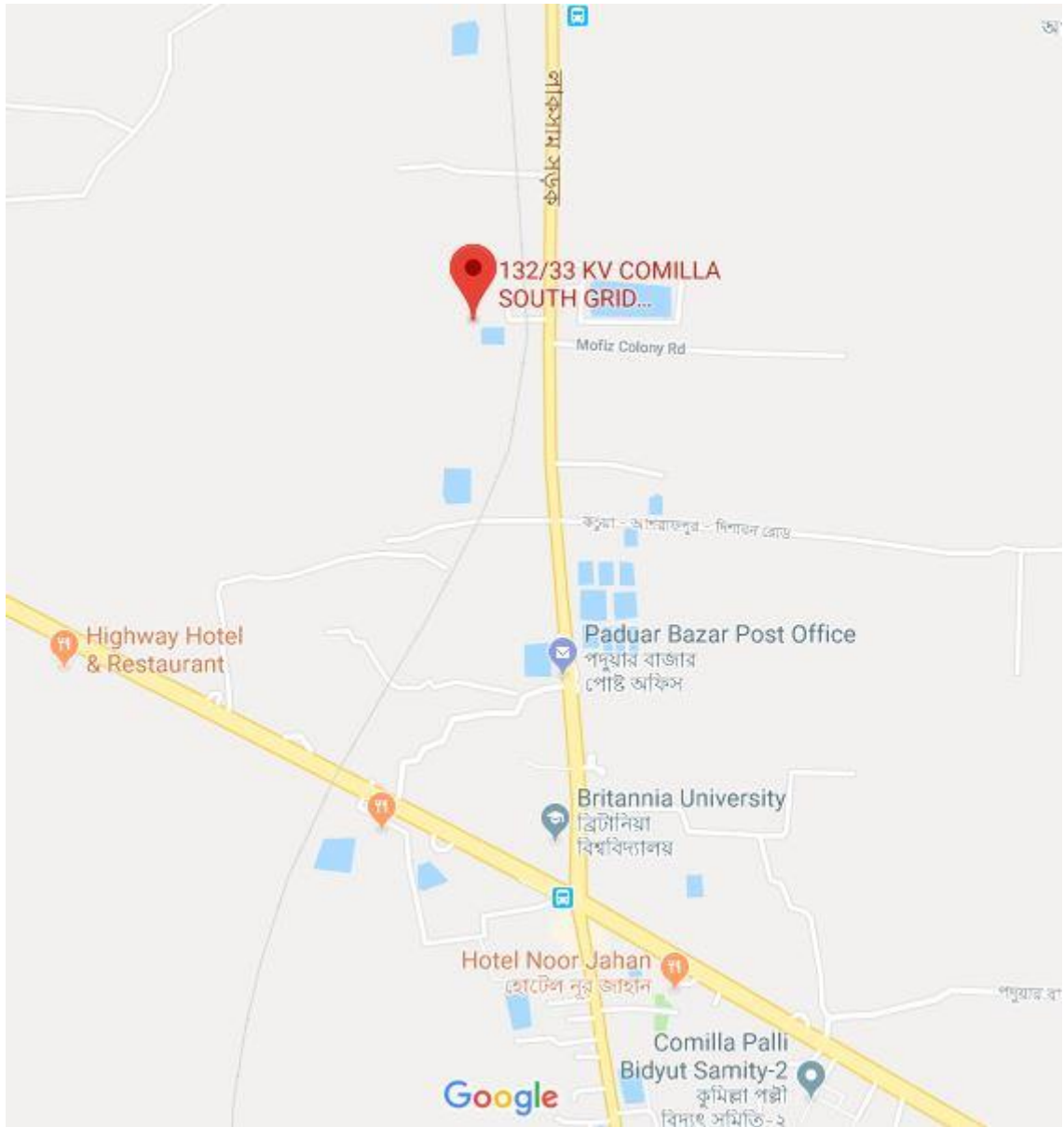


Fig-1: Site Location of 132/33 kV GIS Grid Substation at Comilla (South).

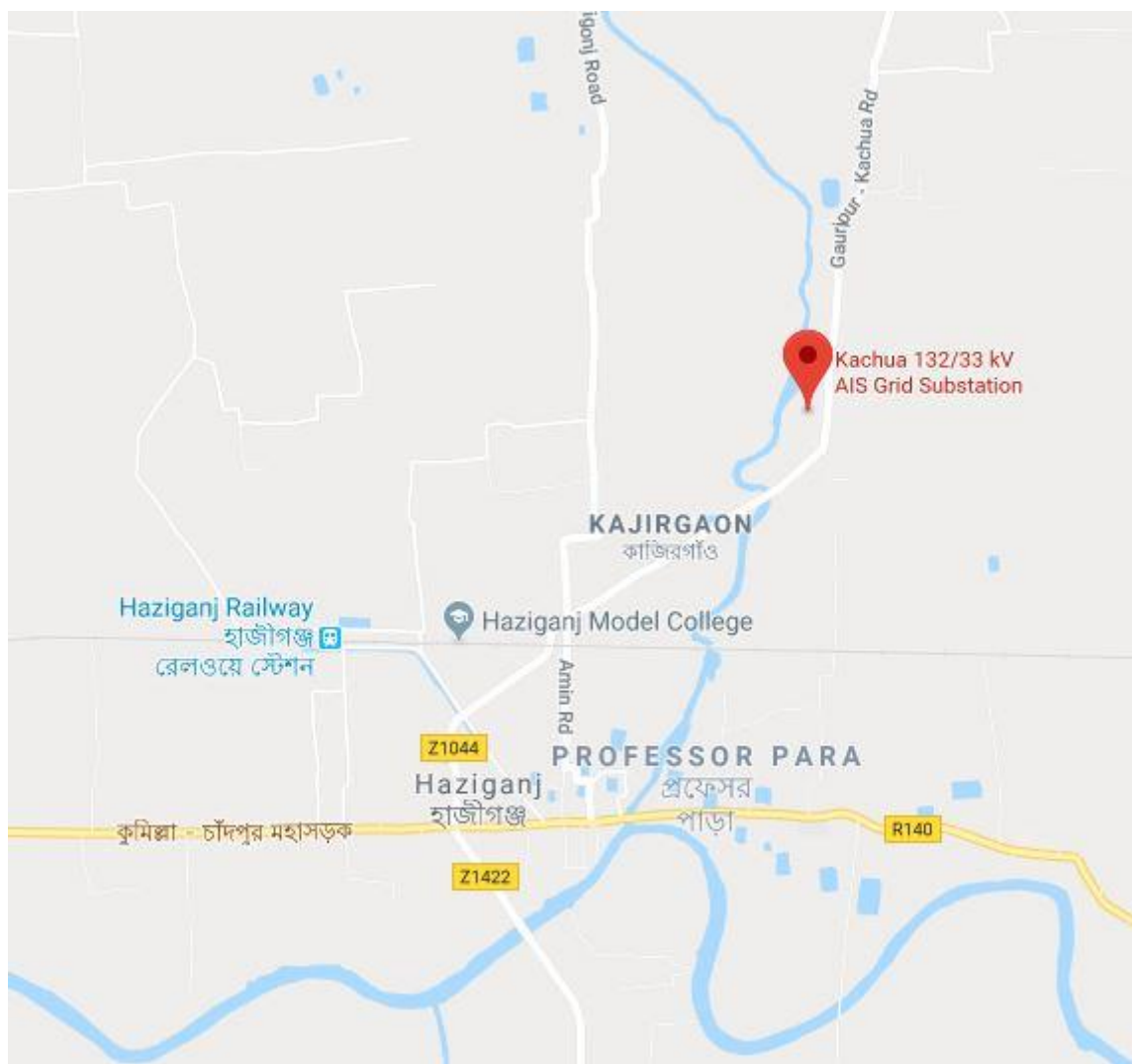


Fig-2: Site Location of 132/33 kV AIS Grid Substation at Kachua, Chandpur.



Fig-3: Site Location of 132/33 kV GIS Grid Substation at Kalurghat, Chittagong.

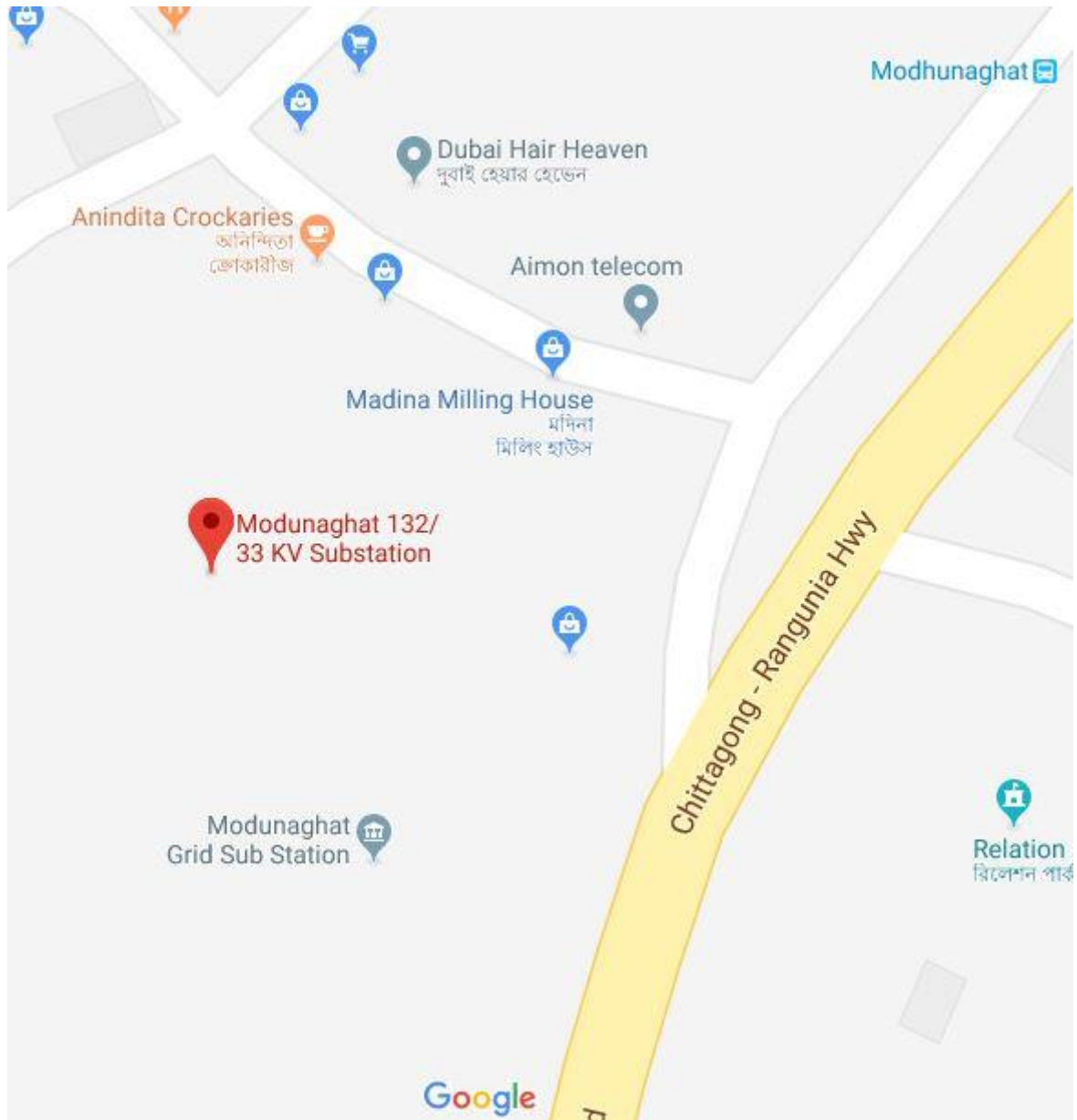


Fig-4: Site Location of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong.

❖ 2.0 Project Description

PGCB is the implementing agency of 400/230/132 kV Grid Network Development Project under the Ministry of Power, Energy and Mineral Resources.

• 2.1 Objectives of the Project

- To increase the power supply reliability of Cumilla, Chandpur (Kachua) and Chittagong (Kalurghat & Madunaghat) area.
- To meet the growing demand of Cumilla, Chandpur (Kachua) and Chittagong (Kalurghat & Madunaghat) area.
- To strengthen the power evacuation arrangement & increase power supply stability, reliability &
- Transmission capability in Cumilla, Chandpur (Kachua) and Chittagong (Kalurghat & Madunaghat) area.

• 2.2 Scope of Work of the Project

➤ Lot-1 (Sub-station):

- a) New 132/33 kV, 2x50/75 MVA AIS Grid Sub-station at Kachua.
- b) New 132/33 kV, 2x50/75 MVA GIS Grid Sub-station at Kalurghat.
- c) Up gradation of 132/33 kV AIS substation to GIS substation at Madunaghat.
- d) Up gradation of 132/33 kV AIS substation to GIS substation at Comilla(S).

➤ Lot-2 (Transmission Lines):

- a) Madunaghat-Kalurghat 132 kV Double Circuit Underground Transmission Line: 7 km
- b) Re-conductoring of Existing Comilla(South)-Chandpur 132 kV Double Circuit Overhead Transmission Line: 65 km

The details of the said project are given in Table-2.1.

✓ **Table-2.1: Project at a Glance**

Project Title	:	400/230/132 kV Grid Network Development Project (Power System Expansion and Efficiency Improvement Investment Program- Tranche 3, Loan No: 3350-BAN)
Ministry/Division	:	Ministry of Power, Energy and Mineral Resources/Power
Executing Agency	:	Power Grid Company of Bangladesh Limited (PGCB)
Location of the Project	:	District: Cumilla, Chandpur & Chittagong. Upazilla: Cumilla Sadar, Hajiganj, Hathajari, Chandgaon.

➤ Lot-1 (Sub-station):

Construction and Completion of 132/33 kV AIS Substation at Kachua, 132/33 kV GIS Substation at Kalurghat and Upgradation of Existing 132/33 kV Madunaghat and Comilla (S) AIS Substation to GIS Substation on Turnkey Basis (Contract No. PSEEIP (TRANCH-3)/ADB/PGCB/P03/SS) has been signed

between PGCB and M/s. ABB India Ltd., India.

➤ **Lot-2 (Transmission Lines)**

Design, Supply, Erection, Testing & Commissioning of Madunaghat-Kalurghat 132 kV Double Circuit Underground Transmission Line and Re-conductoring of Existing Comilla(S)-Chandpur 132 kV Double Circuit Overhead Transmission Line on Turnkey Basis. (Contract No. PSEEIP (TRANCH-3)/ADB/PGCB/P03/TL) has been signed between PGCB and M/s. CCCE-ETERN-HANBAEK Consortium.

• **2.3 Project Progress Status and Implementation Schedule:**

✓ **General Information:**

✓ **Lot-1 (Substation):**

Contract No: PSEEIP (TRANCH-3)/ADB/PGCB/P03/SS

Implementation Schedule:

The project completion date for Lot-1 (Substation) is August 06, 2020 (including Provisional time extension).

✓ **Lot-2 (Transmission Lines):**

Contract No: PSEEIP (TRANCH-3)/ADB/PGCB/P03/TL.

Implementation Schedule:

The project completion date for Lot-2 (Transmission Line) is December 31, 2020 (including Provisional time extension).

✓ **Present Status:**

▪ **Physical Progress & Financial Progress:**

✓ **Lot-1 (Substation):**

1. Upgradation of 132/33 kV Comilla (South) AIS Substation to GIS Substation:

- Civil foundation (with super structure) for GIS building is completed-100% & Finishing work is in progress;
- Pilling for Gantry is completed & pile cap casting work is in progress;
- Equipment foundation completed-70%;
- Cable trench work is completed-50%.
- CRP installation work is in progress.

• **Physical Progress: 76.50%**

• **Financial Progress: 83.40% (22 mUSD)**

2. 132/33 kV AIS Substation at Kachua:

- Civil foundation (with super structure) for Control room building (CRB) is completed-100% and Finishing work completed-95%;
- Internal road work is completed-85%;
- Boundary wall foundation work completed-60% and Brick work completed-45%;
- Civil foundation (with super structure) for Dormitory building is completed-100% and Finishing work is in progress;
- Supply, Installation & Erection work of all equipments has been completed; Pre-commissioning & Testing is in progress

3. 132/33 kV GIS Substation at Kalurghat:

- Civil foundation (with super structure) for GIS building is completed-100%, Brick work completed-75%, Plastering completed-50% and other finishing work is in progress;
- Transformer foundation, installation & erection has been completed;
- 33kV Gantry foundation completed-100%;
- Column casting for Ansar barrack is in progress;
- Cable trench work is completed-35%.

✓ Upgradation of 132/33 kV Madunaghat AIS Substation to GIS Substation:

- Ground floor & 1st floor slab casting for GIS building is completed and 2nd floor column casting is in progress and Brick work completed-35%;
- Transformer foundation, installation & erection has been completed;
- Gantry & Equipment foundation completed-75%;
- Ansar barrack foundation work is completed & Slab casting preparation is in progress;
- Car port & security guard room foundation is completed-100%;
- Cable trench work is completed-40%.

✓ Lot-2 (Transmission Lines):

1.Madunaghat-Kalurghat 132kV Double Circuit Underground Transmission Line :

- Total 4km cable laying is completed out of 7km and another 800m excavation completed.

2.Re-conductoring of Existing Comilla(S)-Chandpur 132kV Double Circuit Overhead Transmission Line:

- The Re-conductoring work has been completed on 03/05/2019;
- Partly Completion Certificate (CC) has been issued on 17th July, 2019;
- The LILO part from existing Comilla (south)-Chandpur 132KV double circuit overhead transmission line to proposed Kachua 132/33KV AIS Substation has been successfully energized on 15th January, 2020.

• **Physical Progress: 78.50%**

• **Financial Progress: 85.48% (10.83 mUSD)**

❖3.0 Safeguards Monitoring Results and Unanticipated Impacts

The pertinent issues with reference to the Environmental Monitoring Plan (EMP) has been identified and correlated with the environmental standards where necessary. Such findings along with any unanticipated impact not included in the EMP have been placed with recommendations in **Table-5.1**. Assistance to EA and its Contractors in taking corrective action/measures and the steps thus taken / to be taken has also been pointed out therein.

In that context, attention has been drawn to take necessary actions particularly in respect of Institutional Requirement and Monitoring Plan for the Post Construction and Operational Phase as per EMP approved by DOE & ADB for the project. This would include assessment of the training and awareness requirement on occupational hazard & safety issues for the operational teams and evaluation of injury and incident reports of the working contractors as well.

Table-3.1: Findings, Recommendations & Assistance to EA & its Contractors in Monitoring EMMP

Sl. No.	Issues & Findings	Actions Taken by
1.	Monitoring Mechanism: This was required for implementing the EMMP	Health and Safety Officers have been appointed by the contractor.
2	Environmental Clearance Certificate (ECC) Renewal: ECC need to be renewed.	ECC renewal is in process
3.	Health & Safety Hazard Check List (HSHCL):	Regular Tool Box Meetings are held at site for awareness of the workers. Contractors have been advised to prepare and maintain HSHCL and it is monitored by EA.
4.	Environmental & Social Components: Environmental and Social Components were to be implemented with due diligence as per provision of the EIA.	PGCB is aware about the status of mitigation measures of potential impact on Environmental and social components.
5.	Environmental Parameters (EPs) Quality Monitoring.	No effluent from site falls into the river. Negligible amount of Green House Gas are emitted from the construction work.
6.	Sharing of information with Project Affected Persons (PAP) & Stakeholders' Response:	PGCB will continue keeping PAP informed in advance for remaining works on the ROW.

3.1 Water Management

All the sites are far from the water sources like river, pond, canal i.e sites are not directly connected with water sources. So no chance of being mixed of some hazardous materials (oil, grease, acid) used in these site with water sources. But these hazardous materials may get mixed with rain water to a little extent. when this slightly contaminated water will penetrate through sand and soil , hazardous materials will be filtrated by soil and sand so hopefully we can say no ground water will be contaminated with these hazardous materials.

A great deal amount of brick, wrought bamboo, cement etc materials are used daily. So metal chip, dust and rubbish produced from these material are scattered throughout the site. These dust and rubbish may contaminate ground water. So these metal parts, meatal chip , rubbish will be removed to safe zone in due time so that these can not be mixed with water and cant contaminate .

3.2 Waste Management

At kacua almost most construction work except a little portion of boundary wall and road are done. So now few workers are working there. Moreover Workers manage their food locally. So at this moment there is no kitchen waste and a little construction waste is in this site. But in other site there is still running major construction work so there has waste and rubbish scattered throughout the site. But after completion these waste both kitchen and construction will be transferred to municipal dumping area immediately.

3.3 Ecosystem and Biodiversity

PGCB sub stations mentioned in this report are far from forest, lake, river, sea make the project areas less diversified habitat of plants and wild animals. For substation, during sand filling no trees were cut thus making no bad effect on ecosystem. But for transmission line there has to cut down some tree at different location. Hence for this some habitats of birds are disturbed and wildlife are gradually relocated.

3.4 Environment, Health and Safety

The EHS Plan of the Contractor has been developed focusing on site specific construction activities, which outlines the key procedures and permits to be implemented to safeguard onsite employees and workers of PGCB and subcontractors at the same time ensuring safe working conditions and efficient operations contractor also implemented No-Smoking Policy, different types of safety notice throughout the substations for ensuring safety of all the labors, senior officials who are working in the substations. They have also implemented the program of no use of cell phone/cameras in various places of the substations. All the documents have been translated into English, and for some cases, in Bengali also.

3.5 Personal Protective Equipment

A Personal Protective Equipment (PPE) Matrix has been developed for ensuring workers' safety for different types of jobs, e.g. cutting, grinding, excavation, work at height, pipe laying or manual lifting, confined spaces, electrical work, welding, spray painting, concreting etc. All the personnel/workers are bound to use mandatory PPEs i.e. safety helmet and safety shoes as well as wear or use job/site specific other PPEs i.e.

safety shield, safety gloves, safety goggles, safety mask, gum boots, safety harness/belt etc. Field Supervisors ensure the use of PPEs, while EHS Team of Contractor surveys/monitors it regularly.

3.6 Involuntary Resettlement

All the land for substation are purchased permanently. The owners of the land are paid as per the government rule, three times price than normal value. And for the land of transmission line the affected people are paid for their loss of crops but not for land as per the rule of our country. For all the site described in this report, PGCB C didn't have to go through involuntary resettlement phase.

3.7 Fire Safety

Fire safety is very important in all construction work specially for power sector. Firing even caused by a little mistake can cost lots of money even life. A developed fire extinguishing system can prevent any unexpected incident. It is one of the key issues that an organization should take care of. Oil filled transformers pose the greatest fire risk in any substation. Various flammable chemical, grease can also be potential reason for fire incident.

While inspecting the project sites, it was noticed that transformers were properly insulated. Layer of rocks were seen under transformers so that no oil can leak and penetrate through the ground and contaminate it. Fire extinguisher (CO₂, ABC dry powder, water) equipment, fire detection alarm was available in the premise.

❖ 4.0 Safety Photos during COVID-19 at different Substation



Fig: Stock of Safety materials during COVID-19 of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong



Fig: Safety maintaining of 132/33 kV GIS Grid Substation at Kalurghat, Chittagong.



Fig: Checking Temperature during COVID-19 of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong

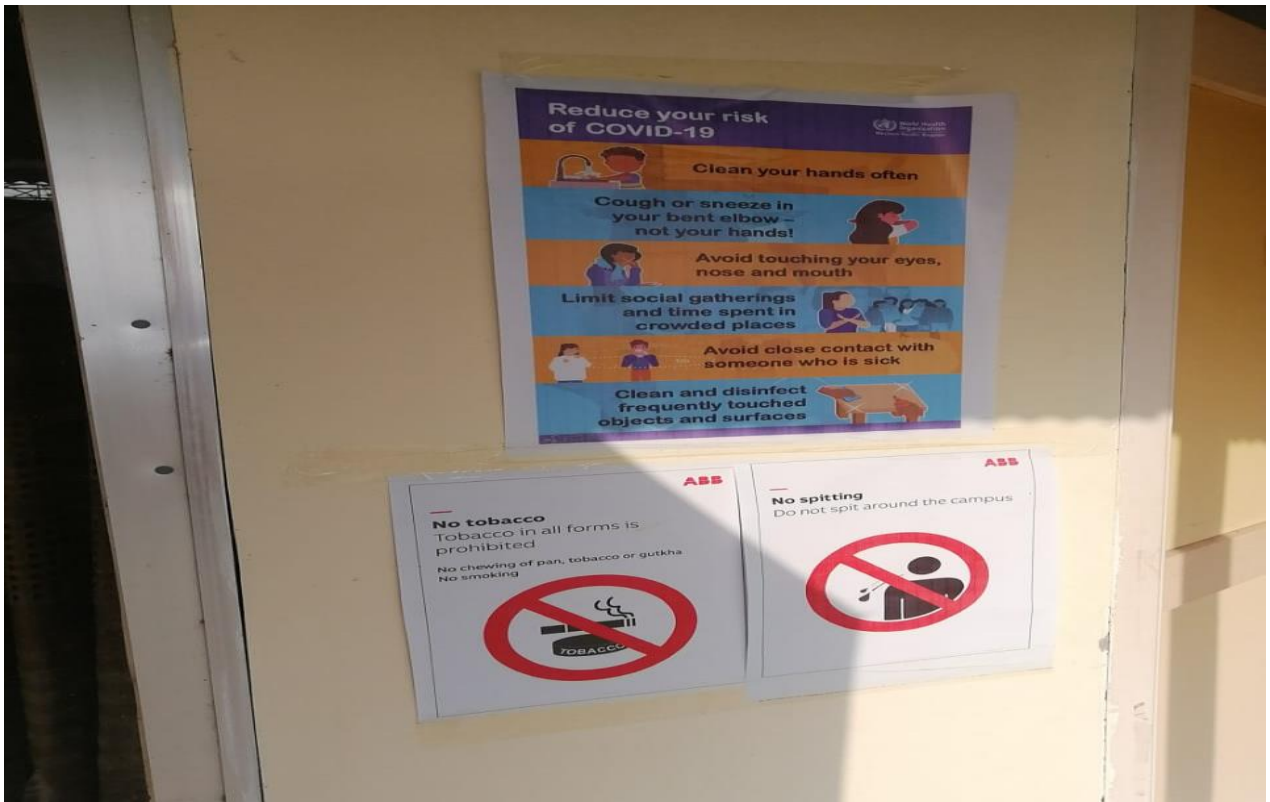


Fig: Safety Instructions during COVID-19 of 132/33 kV AIS Grid Substation at Kachua, Chandpur.

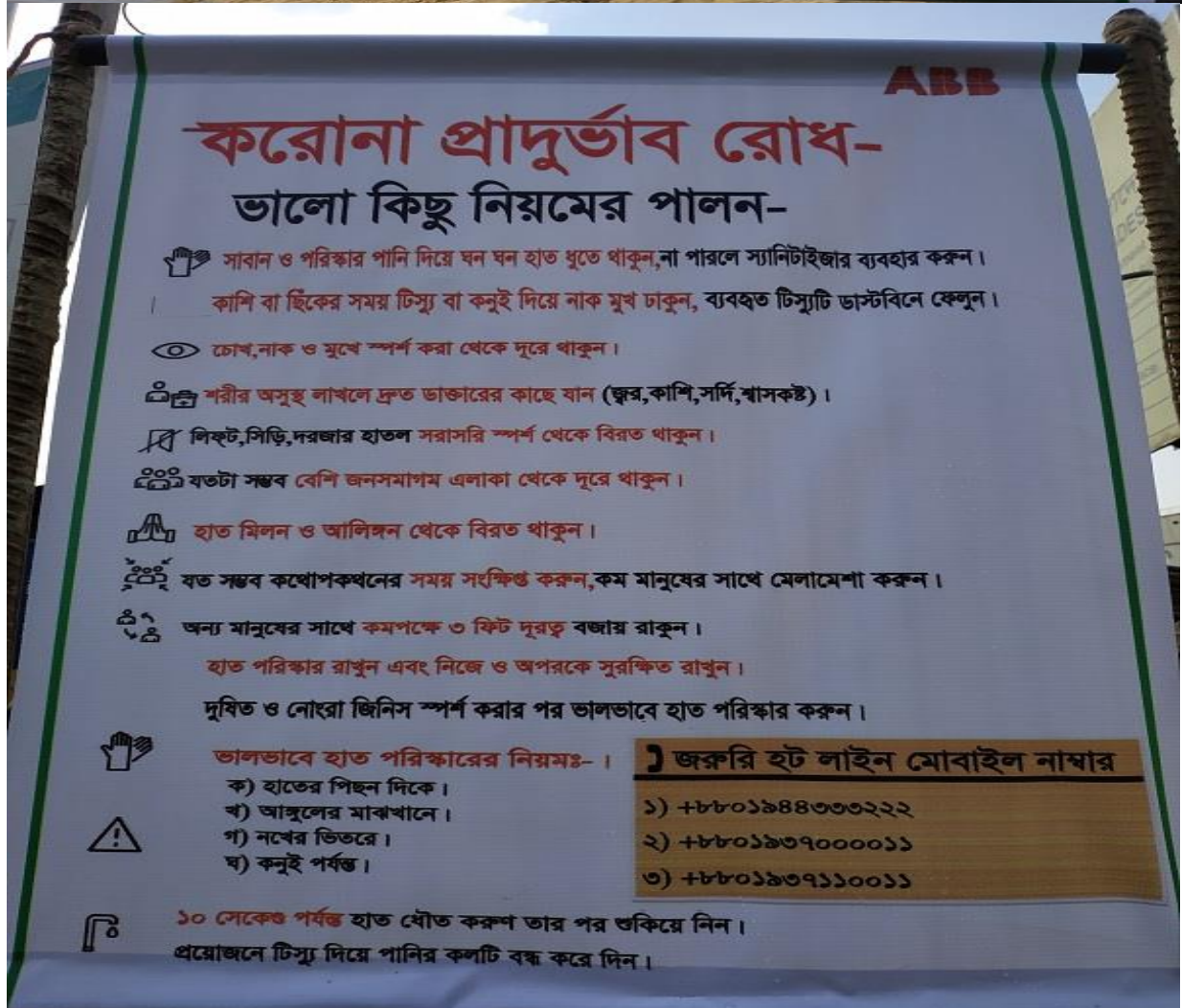
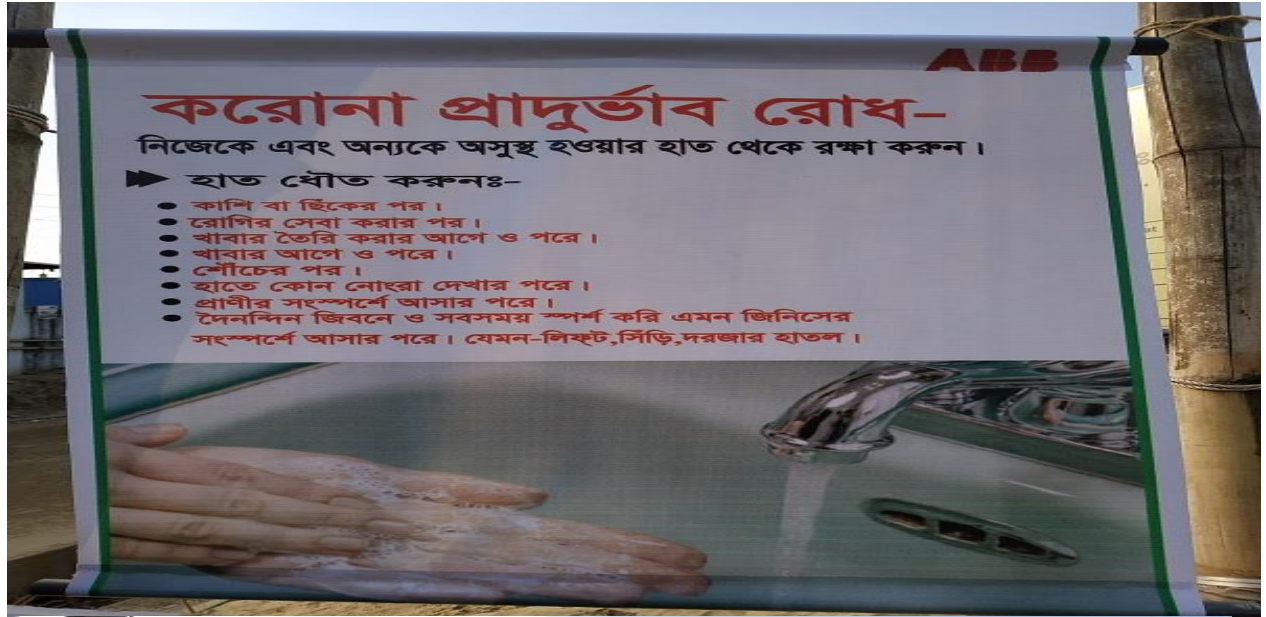


Fig: Safety Instructions during COVID-19 of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong



Fig: Safety Instructions during COVID-19 of 132/33 kV GIS Grid Substation at Kalurghat, Chittagong.



Fig: Washing Hand during CIVID-19 of 132/33 kV GIS Grid Substation at Kalurghat, Chittagong.



Fig: Instructions for how to insure safety during COVID-19 of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong.



Fig: Construction time with maintaining safety & Health Instruction during COVID-19 of 132/33 kV GIS Grid Substation at Madunaghat, Chittagong.

❖ 5.0 Recommendations

This monitoring was conducted at the three sites and explored the compliance status based on ADB safeguard policy, EMP provided in the EIA, Bangladesh Govt. and ADB loan covenant. If you're proposed locations have been identified and existing physical, biological and social conditions observed to get an insight about the base situation. In this stage of environmental monitoring, the Environmental Management System and Action Plan, Occupational Health and Safety, Workers' wellbeing, Biodiversity and Sustainable Management of Natural Resources have been observed through site specific field visit (monthly) and following the indicators stated in the checklist. In addition, compliance status has been provided made it clear indicator's base status during the construction phase of the project at the three selected sites.

The objective and tools of monitoring and measuring the progress of implementation of the EMMP is basically to fulfill the safeguard requirements of ADB as well as that of DOE. Thus continuous updating of EMMP is required for unanticipated impacts standing currently apparent if any. Further, contract document has adequate coverage of Environmental and Occupational Health & Safety (EOHS) issues.

1. The copies of own policy documents of the contractors and their subcontractors pertaining to EHS & OHS along with Tender & contract provisions will be reviewed and evaluated periodically and followed for due assistance in implementing the EMMP. The gaps, if identified in the field through periodic inspection and verification, will be duly addressed.
2. Due safety training and awareness program will be continued particularly on Fire Hazards & Safety Orientation courses.
3. EMMP is a dynamic mechanism and hence the provisions contained in the available tools like EMP of EIA doc will be revisited from time to time.
4. PGCB will also follow up with DOE regarding renewal of validity of their Environmental Clearance for renewal of ECC.
5. PMU always follow up with the contractors about implementation of the recommendations.

❖ 6.0 Compliance to National Regulations

✓ 6.1 Brief summary of status of compliance with Environmental Conservation Rules 1997:

Bangladesh Environmental Protection Act 1995 and subsequent amendments and relevant Acts including Environmental Conservation Rules (ECR)1997 calls for environment-friendly execution of any Power Sector Development project in its all stages of Pre-Construction, Construction and Post Construction activities.

According to Environment Conservation Act 1995 and Environment Conservation Rules 1997, all projects have been classified into four categories (Green, Orange A, Orange B and Red). The power

development projects are allocated to the red category, which triggers an automatic requirement for an Initial Environment Examination (IEE) followed by a full Environmental Impact Assessment (EIA) study. Subject to satisfactory review of the environmental assessment, the Department of Environment (DoE) issues an authorization for the project to proceed. The authorization consists of two parts: a “site clearance”, which gives approval to the site proposed for the project and an “environmental clearance”, which approves the content of the project.

A key requirement of the IEE/EIA for projects classified in the Red categories is an Environment Management Plan (EMP). The function of the EMP is to enable the project proponent PGCB to show the DoE how it will deliver the environmental performance assessed in the IEE/EIA (for which DoE approval is sought). The EMP must describe in detail organization and management responsibilities, give details of how mitigation measures identified in the IEE/EIA will be implemented and explain how monitoring will be carried out.

The PGCB, as the executing agency, is responsible for carrying out IEE and EIA studies of the project. PGCB has already engaged Center for Environment and Geographic Information Services (CEGIS) for conducting IEE and EIA study by splitting the total project between two sections: Section A for TRANCH-2 & Section B for TRANCH-3. IEE and EIA study has been completed for all those sections and based on the assessment; environmental clearance from DoE has been received for all the sections.

EMP has been made by CEGIS as a prerequisite of submitted EIA and getting approval from DOE. The EA (PGCB) has made its contractors concerned about the EMP and site activities are monitored to check the compliance with EMP.

6.2 Compliance to Environmental Covenants from the ADB Loan Agreement:

Civil construction works at different sites are running under the project. DOE’s regulations and ADB’s Safeguard Policy Statement (2009) are in general being complied with by the EA and its contractors. Provisions of the IEE and EMP updated with Hazard Safety issues to fill in by the working contractors and submitting regularly helped verification of compliance at site and so far did not call for any remedial actions to mitigate and making any specific event reference to ADB.

The contractors will submit report on the implementation of safety issues on regular basis with information that they were conducting awareness program and meeting up the gaps. Environmental Covenants are being complied with.

❖ 7.0 Progress of Implementation of EMP

7.1 Compliance to Environmental Management Plan:

As EMP is a key requirement for obtaining Environmental Clearance from DOE. PGCB has submitted an EMP with EIA study. The function of EMP is to identify the impacts on environment because of construction work, how to mitigate the impacts and explain how monitoring will be carried out. All personnel related to construction work are made aware of the EMP by regular meetings and currently, compliance of EMP is monitored by PGCB and safety officers of contractor. So far construction works

are running with full compliance of EMP.

✓ *Table 7.1: Compliance with EMP*

Time	Parameter/Indicator	Location	Frequency	Compliance Status/Remarks
Before Construction	Soil sampling	Substation sites (particularly those with existing structure and equipment dismantled)	Once before construction	Completed
	Local recruitment of workers and staff	Substations, transmission lines	Monthly	On Going.
	Orientation of Contractor(s) and workers on issues like HIV/AIDS, compliance to EMP, etc.	Substations and Transmission line	Once before construction, and as needed	Completed
Construction	Spraying of water to exposed land and before movements of construction vehicles	Substations and road basements when laying of underground cable to connect substations	<ul style="list-style-type: none"> • Weekly at road basements (or as needed) • Every day at substations sites during dry season and as needed during monsoon season 	Being complied
	Solid waste management	Substations, transmission lines	Every week	Being complied
	Danger and warning signs for safety of workers and the public	Substations and road basements affected by laying of underground cables, transmission lines	Once a month	Being Complied
	Announcement to the public of works schedule	Along the road basement affected by laying cables and substations	As needed	Being Complied
	Erosion control measures such as temporary shoring	Substations, transmission lines (if needed)	Once	Being Complied
	Smoke belching construction vehicles	Sub stations and transmission lines	Weekly	Being Complied
	Dust and noise level	Substations, transmission lines	Twice a month	Being complied
	Housekeeping	Substations, and transmission lines	Weekly	Being complied

7.2 *Implementation of Environmental Safeguards Policies*

A focal person has been appointed for supervision of Environmental Management Plan. Consultants will be appointed for ensuring compliance of the Environmental Monitoring and Safeguards Policies, if required. Meanwhile, personnel from Environment Department, PGCB is now in charge of maintaining Environmental Management and Safeguards policy.

Equipment and construction materials are stored in sheltered spaces. All laborers are provided with Personal Protective Equipment.

7.3 Institutional arrangement for Monitoring and compliance

All the employee in our project is responsible to monitor environmental compliance during the completion of the construction of project. The Superintend Engineer, Executive Engineer, Assistant Manager and Assistant Engineers, sub assistant engineers are working under supervision of the Project Director for the compliance monitoring of the construction of all the substation and transmission line at different place of the country.

7.4 Site Specific Environmental Management Plan

Under our project There is running the construction some sub stations and transmission line. The characteristics of all Sub-stations are of the same nature and so the EMPs provided in the IEE report are same, therefore the SEMP suggested in this section would cover all EMPs for all the substations.

Though different contractor and subcontractors work at different site all of them are committed about a common mission of environmental safety issues and that is, they must achieve excellent results in their HSE performances at their working sites. All the contractors must always be proactive in identifying existing and potential Hazards and work towards eliminating and or mitigating the impact of Hazards regarding the EMP provided in EIA report of this projects. Responsibility of HSE falls on everyone in the workplaces which includes employees, customers, contractors, visitors etc.

7.5 Environmental protection

- a) Only licensed disposal collects or shall engaged to carry out the disposal.
- b) The hazardous material, liquids or chemicals shall be disposed in designated bin in collection point, separated from other form of waste such as rubbish or scraps.
- c) All garbage, refuse, waste, debris etc. shall be disposed in designated containers.

7.6 Rules and Regulations for workers

- a) Smoking is not allowed inside the site.
- b) Drugs are strictly prohibited.
- c) Personnel found consuming or in possession of drugs will be handed over to the local authority.
- d) Alcohol consumption within the site area is strictly prohibited.
- e) no addicted personnel is allowed in the site.