BANGLADESH RURAL ELECTRIFICATION BOARD

BREB INSTRUCTION 500-28

POLICY ISSUES AND PROCEDURAL INSTRUCTIONS OF BREB FOR CONDUCTING ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND MANAGEMENT

BANGLADESH RURAL ELECTRIFICATION BOARD
BREB Instruction 500-28

Approval Date: 12/06/2007
Revision Date : 19/02/2020

SUBJECT: POLICY ISSUES AND PROCEDURAL INSTRUCTIONS OF BREB FOR CONDUCTING ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT AND MANAGEMENT

1. PURPOSE

To establish and set forth policy guidelines and responsibilities in an instruction of Rural Electrification System for the proper assessment and management of environmental and social impacts that may occur due to rural electrification activities in Bangladesh.

2. SCOPE

The provisions as stipulated in this policy instruction of Rural Electrification System shall be applicable for the proper assessment and management of environmental and social impacts that may occur due to rural electrification activities in Bangladesh.

3. GENERAL

3.1 Salient Features of Policy Instruction

3.1.1 Environmental and Social Impact Assessment and Management Policy of BREB (**Annexure-A: Policy: Page 5 to 6= Pages**).

3.1.2 Project Development and Implementation Life Cycle Flow Chart (**Annexure-B: Flow Chart No. 1: Page 7 to 7=1 Page**).

3.1.3 EIA Process and Project Approval Process Flow Chart (**Annexure-C: Flow Chart No. 2: Page 8 to 8= 1 Page**).

3.1.4 REB's Decision Making and Reporting Process Flow Chart (**Annexure-D: Flow Chart No. 3: Page 9 to 9= 1 Page**).

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3.1.5 Environmental and Social Assessment and Management Template for Substation Construction (**Annexure-E: IEE, EIA & EMP Template No. S/S-1: Page 10 to 13= 4 Pages**).

3.1.5.1 Process Monitoring and Evaluation Checklist ensuring Environment in the Substation Planning, Design and Construction (**Annexure-F: Monitoring Checklist No. S/S-1.1: Page 14 to 14= 1 Page**).

3.1.5.2 Monitoring Checklist for use in Construction of a Substation (**Annexure-G: Monitoring Checklist No. S/S-1.2: Page 15 to 16= 2 Pages).**

3.1.5.3 Monitoring Checklist for use in Post Construction of a Substation (**Annexure-H: Monitoring Checklist No. S/S-1.3: Page 17 to 17= 1 Page).**

3.1.6 Environmental and Social Assessment and Management Template for Power Line Construction (**Annexure-I: IEE, EIA & EMP Template No. P/L-2: Page 18 to 21= 4 Pages**).

3.1.6.1 Monitoring Checklist for Power Line Construction (**Annexure-J: Monitoring Check list No. P/L-2.1: Page 22 to 22= 1 Page**).

3.1.6.2 Monitoring Checklist for use in Post Construction of Power Line (**Annexure-K: Monitoring Checklist No. P/L-2.2: Page 23 to 23= 1 Page**).

3.1.7 Environmental and Social Assessment and Management Template for Building Construction (**Annexure-L: Template No. BLDG-3: Page 24 to 27= 4 Pages**).

3.1.8 Template-Cum-Checklist for Environmental Impact Mitigation Measures (**Annexure-M: Template-Cum-Checklist No. I/M-4: Page 28 to 29= 2 Pages**).

3.1.9 Compliance Verifications Template-Cum-Checklist ensuring Storage and Maintenance of Substation, Power Lines, Storage Yard, Campus, and Workshop (**Annexure-N: Template-Cum-Checklist No. C/V-5: Page 30 to 32= 3 Pages**).

3.1.10 Environmental Code of Practice (ECP) on Soil Erosion Control

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(**Annexure-O, ECP No. 1: Page 33 to 34= 2 Pages**).

3.2 Resources for Environmental Management

The manpower resources available to BREB and PBS for their Environmental Management Program are the trained personnel who were adequately trained for Environmental and Social (ES) Management Program. These trained personnel shall be able to train additional personnel at BREB and PBS.

3.3 Implementation Process

All environmental issues contained in this policy instruction shall be implemented under supervision and with full responsibility of relevant Senior General Manager/ General Manager (Sr. GM/ GM) of PBS/ Executive Engineer of BREB in accordance with this policy guideline and Implementation Flow Chart No. 3 (Annexure-D) and prepared reports in relevant templates shall be sent to the EMC, BREB for reporting the environmental compliance.

3.4 Key Personnel for Implementation

The policy instruction shall be implemented through the **key personnel** mentioned below. The personnel those who are responsible for design, construction and maintenance at BREB and PBS shall be considered as the key personnel.

(A) Retainer Engineer (RE), Staking Engineer, AGM (O&M), AGM (E&C) and Assigned Officials for specific job are the key personnel of the PBSs when PBS conducts design, construction and maintenance;

(B) Retainer Engineer, Staking Engineer, Assistant Engineer and Assigned Officials are the key personnel of BREB when BREB conducts design, construction and maintenance;

(C) Respective head of the warehouses/workshops/campuses are the key personnel during maintenance of warehouses/workshops/campuses/buildings of BREB or PBS facilities.

3.5 Reporting Process

BREB Reporting Process **Flow Chart** (Annexure-D, Flow Chart No. 3) shall be applicable. The reports as per **Templates and Checklists** (Annexure-E, F, G, H, I, J, K, L, M, N) from the relevant key personnel prepared on implementation, operation and maintenance activities under responsible supervision of relevant XEN/Sr. GM or GM shall be submitted to the REB-EMC for reporting the environmental compliance. The EMC shall submit the reports to Member (Engineering), BREB, through Chief Engineer (P&O). When a report requires revision, the Chief Engineer (P&O) shall forward it to Chief Engineer (Project).

3.6 Legislative and Institutional Framework for ES Impact Assessments

The GOB Environmental Conservation Requirements, GOB Environmental Clearance Process, GOB Constitutional Provisions for Resettlement or Rehabilitation, Requirements of Financial Institutions, Environmental and Social Impact Assessment Process, etc., shall be as outlined under section 3.1 as Salient Features of Policy Instruction **(Annexure A to O)**.

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3.7 Major Environmental and Social Issues in Rural Electrification

The Social Issues, World Bank Policies on Social Issues, Assessment of Social Issues relevant to BREB/PBS Projects, Land Acquisition Act and Process, Environmental Issues and Code of Practices shall be as outlined under section 3.1 as Salient Features of Policy Instruction **(Annexure A to O).**

3.8 Environmental and Social Assessment in Rural Electrification

The Process Flow Charts, Scope and Structure of the ES Assessment, Institutional Arrangement for the EA Process, BREB Instructions (Code of Practices) and Templates for ES Assessment, Proposed BREB Corporate ESA Manual for future development, etc., shall be as outlined under section 3.1 as Salient Features of Policy Instruction **(Annexure A to O).**

3.9 Implementation of the Environmental Management Plan

The Impact Assessment Follow-up, Environmental Impact Mitigation Measures, Monitoring, Reporting, Implementation Schedule, Cost Estimates and Sources of Funds, etc., shall be as outlined under section 3.1 as Salient Features of Policy Instruction **(Annexure A to O).**

3.10 Monitoring of the Environmental Management Plans

The Process Flow Charts, Objectives, Monitoring Program, Implementation and Operation, Evaluation of Data and Lessons Learned, Improvement of ES Assessment Process, ESA Manual and Upgrading of EMP, etc., shall be as outlined and reflected under section 3.1 as Salient Features of Policy Instruction **(Annexure A to O).**

3.11 Reporting requirements for ESA Implementation

All reports relevant to environmental compliance shall be submitted to EMC quarterly. The EMC shall then include these performance data in their Annual Report to the BREB management and concerned offices outside BREB. The ES performance objectives and targets for the next year shall be set based on the performance of the previous year.

4. POLICY

4.1 Environmental and Social Policy of BREB

The policies, elements, objectives and responses to ES Management of REB shall be as outlined and reflected in section 3.1.1 **(Annexure-A).**

4.2 Environment Monitoring Cell (EMC)

All the office staff under the office of the EMC, BREB shall perform and continue the function of EMC. The EMC can receive and process relevant reports and makes communication home and abroad for it's R&D and to formulate necessary procedural formats and its applications as mentioned in Annexure-A of section 3.1.1.

4.3 All Existing REB Instruction Series

This Policy Instruction shall govern all relevant ES aspects regarding EIA, EMP, mitigation measures, etc., against all existing all Instruction Series of BREB.

4.4 Programs for Training and Awareness on Environmental Risks

Each Training Curriculum of Training Directorate of BREB shall include some compulsory classes on Environmental Aspects proposed from EMC and the Trained

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Personnel of EMC, BREB shall conduct such Environmental Training as outlined and reflected in section 3.1.1 **(Annexure-A).**

4.5 Environmental Audits and Environmental Clearance (EC)

The policies, process flow charts, templates, code of practices attached herewith this policy instruction **(Annexure A to O)** shall ensure the environmental and social performance that shall be audited by EMC once in a year for Environmental Clearance.

4.6 Annual Workshop for Better Management

A Workshop shall be undertaken facilitated by BREB/ PBS staff at least once a year where staff working on the Environmental Assessment (EA) work shall be able to discuss improvements to the Environmental Screening Checklists and Environmental Management Plans (EMPs) as well as explore options to better monitor the implementation of the EMP. The focus of this Workshop shall be how BREB shall improve its management of environmental and social issues. The Workshop shall be an opportunity to share experiences among the various PBSs and BREB on how better internalizes environmental and social safeguards to their way of doing business.

5. ENVIRONMENTAL AND SOCIAL ASSESSMENT TEMPLATES

The following templates and checklists shall be used and that shall allow respective BREB and PBS key personnel to conduct the environmental and social assessment and management for projects without difficulties.

5.1 For Substation:

Environmental and Social Assessment and Management Template for Substation Construction (**Annexure-E, Template No.S/S-1**). Process Monitoring and Evaluation Checklist ensuring Environment in the Planning, Design and Construction (**Annexure-F, Monitoring Checklist No.S/S-1.1**). Monitoring Checklist for use in Construction of a Substation (**Annexure-G, Monitoring Checklist No.S/S-1.2**). Monitoring Checklist for use in Post Construction of a Substation (**Annexure-H, Monitoring Checklist No.S/S-1.3**).

5.2 For Power Line:

Environmental and Social Assessment and Management Template for Power Line Construction (**Annexure-I, Template No.P/L-2**). Monitoring Checklist for Power Line Construction (**Annexure-J, Monitoring Checklist No.P/L-2.1**). Monitoring Checklist for use in Post Construction of Power Line (**Annexure-K: Monitoring Checklist No.P/L-2.2**).

5.3 For Building:

Environmental and Social Assessment and Management Template for Building Construction (**Annexure-L, Template No. BLDG-3**).

5.4 For Mitigation Measures:

Template-Cum-Checklist for Environmental Impact Mitigation Measures (**Annexure-M, Template-Cum-Checklist No.I/M-4**).

5.5 For Compliance Verifications:

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Compliance Verifications Template-Cum-Checklist ensuring Storage and Maintenance of Substation, Power Lines, Storage Yard, Campus and Workshop (**Annexure-N, Template No.C/V-5**).

6. ENVIRONMENTAL CODE OF PRACTICES (ECPs)

The respective REB and PBS key personnel for mitigating impacts shall use the following ECPs:

6.1 Environmental Code of Practice (ECP) on Soil Erosion Control (**Annexure-O, ECP No. 1**): The pole erection, tree cutting and solid wastes storage and disposal shall be as per existing practices of BREB and PBSs and relevant ECPs on these issues shall be considered for inclusion at second phase of implementation of this policy instruction.

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BANGLADESH RURAL ELECTRIFICATION BOARD
Environmental and Social Impact Assessment and Management
Policy of BREB

1.0. Introduction:

The government of Bangladesh (GOB) is keen to protect and preserve the environment and improve social conditions in any infrastructure development programs. When a Development Partner finances a development project they should be aware of and comply with the institutional and legal requirements in Bangladesh. This policy instruction provides the procedures and guidelines for BREB and PBS for implementing any projects that should be safe, sound, and sustainable environmentally and socially. The following projects activities must be made **Safe, Sound, and Sustainable:**

1. Site Selection
2. Land Acquisition and Involuntary Resettlement
3. Planning and Studies
4. Design
5. Construction
6. Operations and Maintenance
7. Wastes Management including Hazardous and Toxic Wastes

BREB is committed to and has the strong desire to resolve the Environmental and Social issues / impacts during any energy development projects including implementation of sub-station, switching station and electrical system construction projects. BREB is chartered to develop and operate electricity generation facilities and electrical infrastructures in rural Bangladesh and it wants to follow **best practices** in environmental protection and conservation and **is committed to put strong emphasis** on minimizing (or eliminating) **social impacts** during construction of power generation and electrical facilities.

BREB policies and procedures are based on the following:

- Enhance the quality of life and environment both within and outside the project areas by:
  - i) Conserving, protecting and improving the quality of natural resources; and
  - ii) Paying attention to the legitimate concerns of the stakeholders, particularly the project affected persons.
- Prevent environmental and social impacts by:
  - i) Minimizing the release of pollutants into the atmosphere; and
  - ii) Allowing minimum disturbances to natural resources to preserve biological diversity.

The need to incorporate environmental management into developing projects is fundamental to the concept of **sustainable development (SD)**, which was the theme of the 1992 Earth Summit in Rio de Janeiro, Brazil. Before the Earth Summit the environmental issues were not significantly addressed. The UNEP prescribed some elements for managing environment, which are being followed for sustainable development (UNEP 1994). According to the Bangladesh Environment Conservation Rules 1997 (ECR 1997), the projects like generation and distribution of power/electricity falls under 'Red Category', needs preparation of EIA reports and EMPs for taking Environmental Clearance (EC) from GOB Department of Environment.

2.0. Standard Environmental and Social (ES) Program Application

The elements and objectives stated under first column in Table 2.1 below are the Standard ES program. These are clearly declared for proper environmental management at BREB/PBS. This policy will enforce the Standard ES Program to ensure the ES issues for making the rural electrification sector (RES) in Bangladesh environmentally and socially safe, sound and sustainable. The responses to Standard ES Program requirements are shown in Table 2.1 below:

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Table 2.1: Elements, Objectives and Responses of BREB to ES Management

Elements and Objectives	Responses of Rural Electrification Sector (BREB/PBSs) in Bangladesh
1. Sound policies and clear objectives, which define environmental and social issues on a clear published approach concerning environmental protection.	1. This policy and ESA Manual outlines the environmental and social issues and identify sectoral approach.
2. Visible and effective management commitment to environmental protection.	2. This policy and ESA Manual ensures visible and effective management commitment to environmental protection.
3. Clearly defined line management responsibility and accountability.	3. This policy and ESA Manual outlines clearly the line management responsibility and accountability.
4. Adequate resources for the program.	4. The manpower resources are: A) The trained personnel of REB and PBSs on Environmental and Social Management Program. B) The trained personnel of Electrical Consultancy Firms included in RE Program.
5. Well defined operating standards, realistic targets for discharges and safety.	5. This policy and ESA Manual outlines clearly the operating targets in the form of checklists, templates, EMPs, guideline procedures for discharges and safety.
6. Regular review of environmental performance e.g. environmental audits.	6. The templates, checklists, EMPs, etc., contained in this policy will ensure the environmental and social performance that shall be audited by EMC once in a year for Environmental Clearance.
7. Programs for training and awareness on environmental risks.	7. Each Training Curriculum of Training Directorate of REB shall include some compulsory classes on Environmental Aspects and the trained personnel of EMC, BREB, shall conduct such Environmental Training.
8. Effective incident reporting and investigation.	8. The templates, checklists, EMPs, procedures etc., contained in this policy shall serve the purposes.
9. Effective emergency planning for accidents, spills and fires.	9. The templates, checklists, EMPs, procedures etc., contained in this policy shall serve the purposes.
10. Commitment for providing adequate/ proper compensation, medical treatment, job security (or new employment opportunity), legal protection, etc., during involuntary resettlement.	10. The templates, checklists, EMPs, procedures etc., contained in this policy shall serve the purposes.

3.0 Environmental and Social Aspects in all the Existing BREB Instructions

The BREB and PBS represent the Rural Electrification Sector (RES) in Bangladesh and they have been operating and maintaining their facilities and systems through a series of code of practices called "BREB/PBS Instruction Series". The ESA Manual has noted the key issues addressed in all these existing REB Instructions. This Policy Instruction shall govern all relevant ES aspects regarding EIA, EMP, mitigation measures, etc., against all existing all Instruction Series of BREB and PBS.

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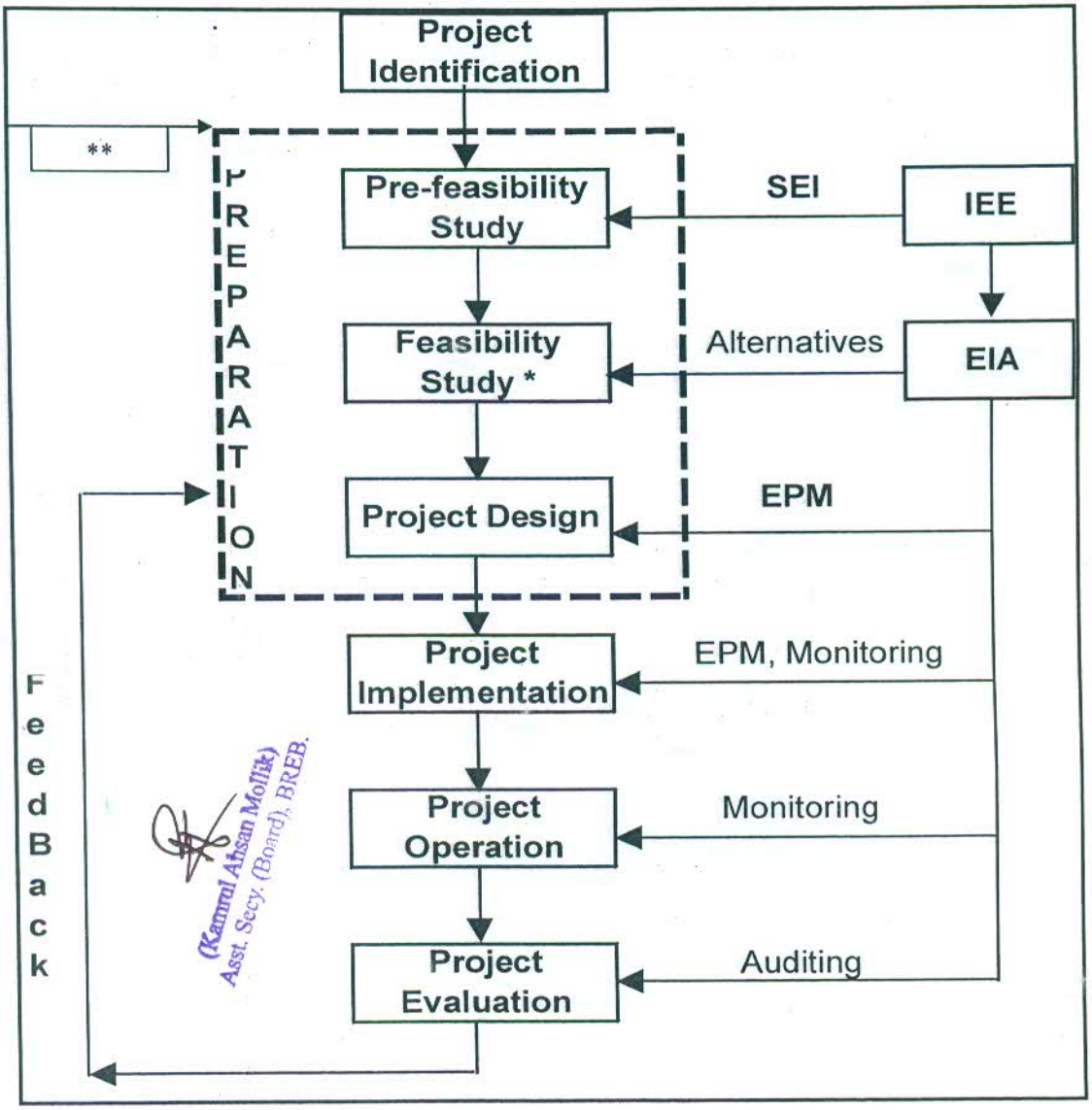
Annexure: B Flow Chart No. 1

RURAL ELECTRIFICATION BOARD, BANGLADESH

Project Development and Implementation Life Cycle Flow Chart

Project Development and Implementation Life Cycle-
Environmental and Social Mitigation and Management Flow Chart



*Feasibility study of any project should include the (i) cost (financial) benefit analysis, (ii) cost (economic) benefit analysis, and (iii) cost (social) benefit analysis. ** Directorate of Program & Planning, BREB in collaboration with EMC, BREB, shall perform the SEI, IEE, EIA and EPM during project preparation.

IEE-Initial Environmental Examination	SEI-Significant Environmental Issues
EIA- Environmental Impact Assessment	EPM-Environmental Protection Measures

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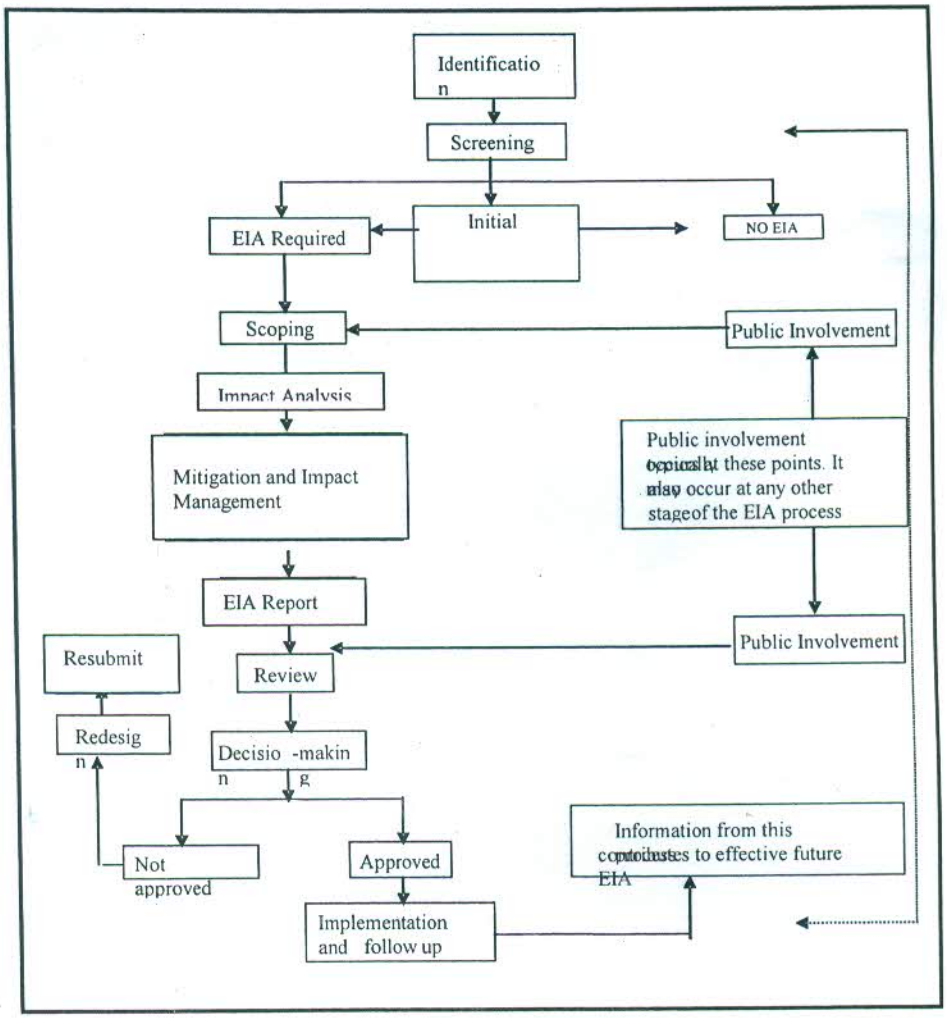
Annexure: C Flow Chart No. 2

RURAL ELECTRIFICATION BOARD, BANGLADESH

EIA Process and Approval Process Flow Chart for Project Planning

Environmental and Social Assessment and Project Approval Process Flow Chart



Resources:

(A) The trained personnel of REB and PBSs on Environmental and Social Management Program.

(B) The trained personnel of Electrical Consultancy Firms involved in RE Program.

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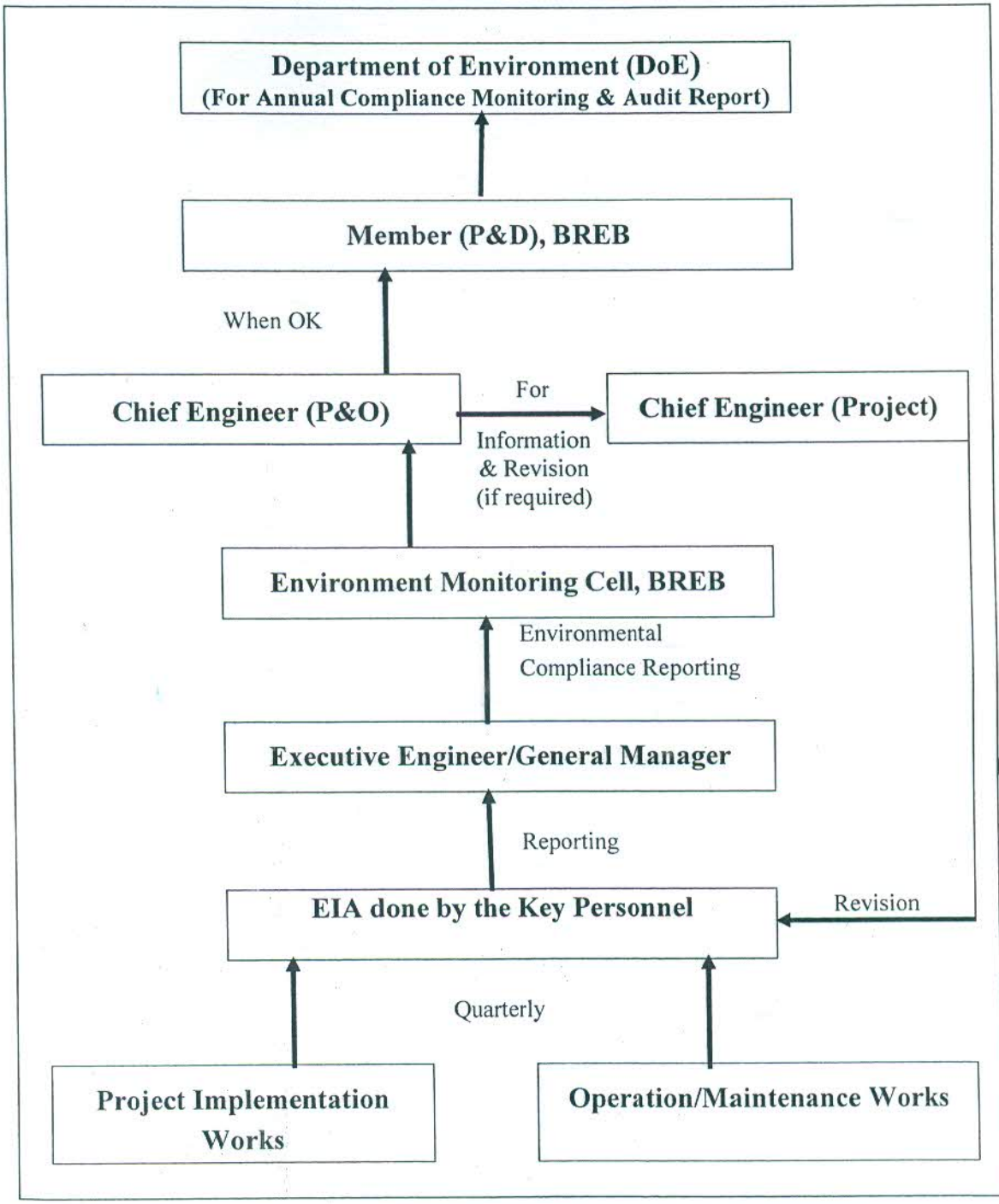
Annexure: D Flow Chart No. 3

BANGLADESH RURAL ELECTRIFICATION BOARD

Reporting Process Flow Chart for

Project Implementation and Operation & Maintenance Works



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BANGLADESH RURAL ELECTRIFICATION BOARD

Environmental & Social Assessment & Management Template for Substation Construction

Substation Identification Information

Name of PBS:.....	Name of Substation:.....
Source of Finance:.....	Location of Substation:.....
Status of Construction: Proposed/Constructed/Under Construction/Renovated/Taken over (Put Tick Marks)	

Description of Baseline Conditions of Substation Area

Sl. No.	Questionnaires (Put Tick Marks or provide information where applicable)	Reporting
1.	**Land Type:** Whether the land is Agriculture/Fallow/ Homestead/ Natural Forest/Fruit Garden/Wetland/ Wildlife habitat/Fisheries land/Archeological site/ Ancient monument site/ Biodiversity area/ Non-productive high land.	
2.	**Current Uses of Land:** Whether the land is occupied by Paddy/Crop/Huts/Houses/Fruit trees/Ditch water/Sand/Fishes/ Grasses/Bushes/Bamboos/Non-productive Fallow land, etc.	
3.	**Land Owner:** Whether the land owner is Woman/Widow/Disable.	
4.	**Purchase Type:** Whether the land is owned by Acquisition/Private purchase of the PBS/Taken over	
5.	**Mode of compensation:** Whether the payment is in Cash/Kind/Exchange of Land/Donation.	
6.	**Value of Compensation:** Whether paid Market Value as per Govt. provision/Increment on Market Value as per Govt. Provision/Lower than Market Value/ Highest Market Value	
7.	**Land Height:** Height of the land from the nearest existing road (in meter)	
8.	**Surroundings:** Land is surrounded by Crop/Houses/Water/Trees/ Bamboos/Bazaar/Grass land/Industries/Roads/Fallow land.	
9.	**Distance:** Distance between Alternative-1 and 2 sites (in km)	

Description on Alternative Analysis

Sl. No.	Questionnaires	Reporting
1.	**Avoidance of Agriculture Land:** Have there any alternatives to avoid Agriculture land?	
2.	**Superiority of Selected Site:** Whether Selected Site is superior to other Alternatives regarding Technical, Social, Economical and Environmental aspects.	

Initial Environmental Examination (IEE) of the Substation

ENVIRONMENTAL PARAMETERS	INITIAL ENVIRONMENTAL EXAMINATION				
	Positive impact	No impact	Adverse Impact		
			Low	Moderate	Severe
Ecological Parameters					
1. Forest					
2. Tree Plantation/Cutting					
3. Fisheries					
4. Wetlands					
5. Wildlife					
Physico-chemical parameters					
6. Soil erosion and Siltation					
7. Drainage Congestion and water logging					
8. Regional hydrology / flooding					
8. Flood Control and Drainage					
10. Soil Characterizes/soil fertility					
11. Ground water table					
12. Water pollution					
13. Dust pollution					
14. Obstruction to waste water flow					
Socio-economic Parameters					
15. Land acquisition and Resettlement					
16. Women empowerment					
17. Health and Nutrition					
18. Loss of agricultural lands					
19. Employment opportunities					
20. Commercial and service facilities					
21. Industrial activities					
22. Irrigation facilities					
23. Land ownership pattern					
24. Change in land use					
25. Landscape					

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Annexure- E

Identification of typical Key Issues of the Construction of Substation

Environmental attributes/resources	Magnitude of Impacts			Type of impact				Temporal extent		Spatial extent		Mitiga-bility		Key Issues
	Severe	Moderate	Low	Direct	Indirect	Direct & Indirect	Cumulative	Long term	Short term	Widespread	Local	Fully	Partially	
Ecological Parameters														
1. Forest														
2. Tree Plantation/ Cutting														
3. Fisheries														
4. Wetlands														
5. Wildlife														
Physico-chemical parameters														
6. Soil erosion & siltation														
7. Drainage Congestion and water logging														
8. Regional hydrology/ flooding														
9. Flood Control and Drainage														
10. Soil Characterizes/ soil fertility														
11. Ground water table														
12. Water pollution														
13. Dust pollution														
14. Obstruction to waste water flow														
Socio-economic Parameters														
15. Land acquisition & Resettlement														
16. Women empowerment														
17. Health and Nutrition														
18. Loss of agricultural lands														
19. Employment opportunities														
20. Commercial and service facilities														
21. Industrial activities														
22. Irrigation facilities														
23. Land ownership pattern														
24. Change in land use														
25. Landscape														

Environmental Management Plans (EMPs) for the Substation and Mitigation Reporting

Environmental key issues	Potential impacts	Mitigation measures	Reporting against each mitigation measure
Forest	Clearing of trees/habitats of wild animals	1. Avoid such location for substation	1.
Tree and Branch Cutting	Loss of vegetation/habitats due to clearing	1. Disturb/clean vegetation/ habitats only where necessary	1.
		2. Reestablish vegetation through plantation	2.
	Loss of valuable trees/ranches due to cutting/clearing	3. Conservation measures should be taken to protect **Cash-in,** Rare and Endangered species as recommend	3.
		4. **Covered cable** shall be used for saving cash-in trees	4.
Tree Plantation	Protection of substation area	1. Protect the areas by fencing with extensive indigenous tree plantation & confine the impact within the locality	1.
	Tree plantation surrounding the substation	2. Compensate the loss of trees by extensive plantation of new tress surrounding the substation keeping clearance as per specified provisions of ROW and avoiding plantation of bamboos and eucalyptus	2.

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Fisheries	Loss of breeding, nursery and feeding ground in adjacent flood plain	1. Prevent erosion and accumulation of eroded soils into the adjacent flood plain	1.
	Reduction in open water fisheries	2. Prevent discharge of the construction debris/pollutants (cements, grease/oils into the adjacent lands/water bodies)	2.
Wetlands	Loss of breeding/nursery grounds for valuable natural species	1. Avoid low-lying lands/wetland as site for the construction of sub-station	1.
Wildlife	Force the wild animals to move into the deep jungles	1. Avoid the location of the substation from the jungle/ heritage of wild animals	1.
Environmental key issues	**Potential impacts**	**Mitigation measures**	**Reporting against each mitigation measure**
Soil erosion and siltation	Rain-cut the slopes of substations after their ground-stability	1. Stabilize the slopes of substations by proper clay layering, compaction and grass-covering/small tree plantation (select the species that will not affect electric lines)	1.
	Eroded soils subsequently transported to agricultural lands affect the soil fertility and crop yield	2. Cover the ground surface with grass (Dubra) as soon as it is exposed	2.
	Increase the turbidity of adjacent water bodies affecting the fish yield of the water	3. Perform the construction work in the dry season if possible.	3.
Drainage Congestion and water logging	Substation constructed on roadside drainage lines will affect the natural drainage of rain/flood water that may result in localized water logging	1. Avoid construction of substations cutting natural drainage lines	1.
		2. Where this is unavoidable, provide alternative functional drainage lines	2.
	Affect the agricultural production	3. Avoid filling low-lying lands for construction of the substation	3.
	Low-lying land becomes a mosquito breeding ground and spreads waterborne-diseases	4. Perform adequate provision of uninterrupted rainwater/ floodwater drainage from the surrounding areas.	4.
Regional hydrology/ flooding	Substations constructed without flooding considerations may get inundated during abnormal flooding that affect power distribution	1. Raise the plinth level of substations above abnormal local flood level	1.
Soil Characterizes/ soil fertility	Damage the soil texture and quality	1. Prevent the discharge of the construction wastes (cement, oil/grease, and similar others into the adjacent lands)	1.
		2. Aware farmers to adopt Integrated Pest Management (IPM) approach pest management.	2.
	Affect the agricultural yielding capacity of the soil in the long-run	3. Develop proper waste management system including, collection and proper disposal of wastes	3.
		4. Aware farmers to apply organic fertilizer in the fields	4.
Ground water table	Affects the recharge of the ground water though very limited in scale, by converting ground into the hard surface.	1. Avoid concreting the surface as much as possible and	1.
		2. Make the ground surface hard where abortively necessary	2.
Water pollution	Affect the quality of water making it unsuitable for aquatic biological use and human consumption	1. Collect and storage the construction wastes (cement, grease/oil, etc) and properly dispose those with appropriate treatment (if required)	1.
	Deteriorate water quality	2. Use integrated pest management approach through M/O Agriculture to avoid the harmful pesticides	2.
Dust/ Noise pollution	Dust generated during carrying and filling of soils affect health of construction workers as well as nearby communities	1. Do watering to at regular interval to subside dusts during construction	1.
		2. Cover earth surface with grass after completion of earth-filling to avoid future dust generation	2.
	Affect the photosynthesis of the trees	3. Avoid construction works in the sleeping time/night	3.
Obstruction to waste water flow	Raising of lands for establishment of sub-station, interrupting the flow of waste water from households/ industries etc.	1. Avoid land-filling on the flow path of waste water/ rainwater/flood water	1.
		2. Provide necessary structure if certainly required or not to avoid the above	2.

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Health and Nutrition	Health risk associated with the handling/operation of the substation	1. Take appropriate precautionary measures to avoid the risk associated with the operation and maintenance of substation. During works with equipment safety cloths, equipment and tools such as helmets, gloves, shoes, insulated tools, etc., shall be used including proper grounding as per respective safety instructions.	1.
	Improvement in nutrient supply through increased agricultural production with land irrigation by improved power driven motor.	2. Ensure power supply as required in the dry season for agricultural land irrigation	2.
	Public health and safety during camp construction	3. Camp should have proper fence around construction area/camp having pure water (Arsenic free) supply & hygienic sanitation system.	3.
	Construction works near public roads disrupt traffic movement	4. Implementation of traffic measures is necessary. Prepare detour to avoid traffic congestion. Red light should be provided to avoid accident	4.
		5. Signs and signals such as "Construction works ahead" / "Drive slow" must be fixed	5.
Land Acquisition	Deprival/dissatisfaction of land owners	1. Full market price shall be compensated as per 2007 Draft National Policy on Involuntary Resettlement	1.
	Ethnic minority/ Widows/Disables/ Hardcore poor	2. Avoid acquisition of land of such group of people and they should be involved in the project to share the benefits	2.
Loss of agricultural lands	Loss of agricultural lands permanently	1. Avoid agricultural lands (3-cropped-lands) as far as possible	1.
	Marginal poor farmers may be severely affected and leads to evolving localized social and political issues	2. Minimize lands by improved technical design for substations	2.
Environmental key issues	**Potential impacts**	**Mitigation measures**	**Reporting against each mitigation measure**
Employment opportunities	Provide direct employments in the implementation and O&M of the sub-station and power distribution lines	1. Ensure the employments for the poor with priority	1.
	Indirect employments from the industries, agriculture, and relevant commercial and service sectors	2. Ensure uninterrupted power supply, specially during the peak hour/dry season	2.
Commercial and service facilities	Cultural property	1. Avoid damaging Mosque, Graveyard, Pagodas, Temples and other sensitive areas of cultural significance.	1.
	Benefits from improved power supply in the commercial and service facilities	2. Ensure uninterrupted power supply, specially during the peak hour/dry season	2.
Industrial activities	Encourages people to establish industries of various sizes due to power supply	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
		2. Ensure Environmental Clearance Certificate from DoE.	2.
Irrigation facilities	Improved power driven motorized irrigation system	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
	Lowering of groundwater table	2. Minimize the loss of abstracted groundwater by appropriate planning engineering measures through Ministry of Agriculture, Water Resources and Irrigation	2.
Land ownership pattern	Save the poor/marginal farmers from selling their lands due to increased earning from agricultural lands with improved irrigation	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
Landscape	Affect the landscape of the area by a piece of raised land	1. Beautifying the area by grass-covering, planting special species of trees that do not affect the functionalities of substations and/lines	1.

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Leopold Graded EIA Matrix for the Substation without (Small letters) and with mitigation (Capital letters) of EMPs

Environmental attributes/resources	Relative weight age (wi)	No/insignificant impact		Positive Impact (vi) (See footnote for the abbreviations of columns)										Negative Impact (vi) (See footnote for the abbreviations of columns)										Graded value	
				Very low		Low		Moderate		High		Very high		Very low		Low		Moderate		High		Very high		$w_i v_i$	
Impact scale/rating/degree		0		+1		+2		+3		+4		+5		-1		-2		-3		-4		-5			
Abbreviation of Columns*	a	b	B	c	C	d	D	e	E	f	F	g	G	h	H	i	I	j	J	k	K	l	L	m	M
Ecological Parameters (25)																									
Forest**	10																								
Tree Plantation/Cutting	5																								
Fisheries	4																								
Wetlands	3																								
Wildlife	3																								
Physico-Chemical Parameters (35)																									
Soil erosion and siltation	3																								
Drainage Congestion and water logging	5																								
Reginal hydrology/ flooding	6																								
Flood Control and drainage	6																								
Soil Characterizes/soil fertility	5																								
Ground water table	3																								
Water pollution	3																								
Dust pollution/Noise pollution	2																								
Obstruction to waste water flow	2																								
Socio-Economic Parameters (40)																									
Land Acquisition & Resettlement	5																								
Women empowerment	4																								
Health and Nutrition	4																								
Loss of agricultural lands	6																								
Employment Opportunities	5																								
Commercial and service facilities	4																								
Industrial activities	4																								
Irrigation facilities	4																								
Land ownership pattern	2																								
Landscape	2																								
Total graded value ($\sum. w_i v_i$)																									

**The same column has been divided into 2 sub-columns, where small letter is for without mitigation and capital letter is for with mitigation of EMPs.*
***Conservation of forests and plantation activities compensates/minimizes more or less all other environmental degradation, hence regarded as the highest impact scale/rating/degree during assessment of impacts.*

<Signature, Date, Name, Seal of Key Personnel responsible for reporting and mitigation>

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BANGLADESH RURAL ELECTRIFICATION BOARD
Process Monitoring and Evaluation Checklist ensuring Environment in the Substation Planning, Design and Construction

Name and location address of the Substation (S/S):
Name of PBS:

What to do	Environmental parameters to monitor	When to monitor	Who will monitor
Tick the appropriate environmental parameters as relevant and appropriate (to be filed based on IEE/EIA report).	i. Tree/branch cutting ☐ ii. Tree plantation ☐ iii. Wetland filing ☐ iv. Soil erosion ☐ v. Soil siltation ☐ vi. Drainage congestion ☐ vii. Water logging ☐ viii. Proneness of the site to flooding ☐ ix. Loss of soil fertility. ☐ x. Dust and noise pollution ☐ xi. Land acquisition ☐ xii. Loss of agricultural lands ☐ xiii. Disturbance to landscape ☐	During planning and design of the substation and preparation of bid documents.	At the Planning Directorate of REB, by the designer and person/ engineer involved in the preparation of bid-documents.
Tick the identified relevant environmental parameters for which appropriate measures have been reflected in the bid-documents (to be filed based on the review of the bid documents prior to tendering).	i. Tree/branch cutting ☐ ii. Tree plantation ☐ iii. Wetland filing ☐ iv. Soil erosion ☐ v. Soil siltation ☐ vi. Drainage congestion ☐ vii. Water logging ☐ viii. Proneness of the site to flooding ☐ ix. Loss of soil fertility ☐ x. Dust and noise pollution ☐ xi. Land acquisition ☐ xii. Loss of agricultural lands ☐ xiii. Disturbance to landscape ☐	After preparation of the bid document	By the current Office of the Timber Products Specialist and Environment

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RURAL ELECTRIFICATION BOARD, BANGLADESH
Monitoring Checklist for use in Construction of a Substation

(Only the relevant items to be touched)

Name and location address of the Substation (S/S):
Name of PBS:

A. Tree Cutting and Plantation
Name of species and Number of trees cut and planted:

Tree cut		Tree planted	
Name of species	Age & numbers	Name of species	Numbers

Note: Under one species of tree, several ages of trees and corresponding numbers may be there. For example, under mango tree, 2 trees of 20 years old are required to cut; then write (20yrs, 2).

B. Wetland filing
Amount of area filled: (i) .....sq.m, (ii) Name of wetland species affected if any.....

C. Soil erosion
Amount of area affected: (i) .....sq.m

D. Soil siltation
Amount of area affected: (i) .....sq.m

E. Drainage congestion
Amount of area affected: (i) .....sq.m

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F. Water logging
Amount of area affected: (i) .....sq.m

G. Proneness of the site to flooding (to be filled from record taken from local people)
Flooding depth of the site after filling from annual flooding: (i).....m, (ii) from 5 years frequency flood: .....m and (iii) from 10 years frequency flood:.....m

H. Loss of soil fertility
Amount of agricultural lands suffered from soil siltation:
Is the construction debris (waste soils, khoa, concretes) collected and disposed properly? Yes/No:

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I. Dust and Noise pollution

Is the dust being generated during construction from land filling? Yes/No
If Yes, is watering being done to subside dusts? Yes/No
Is there any locality close to the substation receiving disturbance from noise of construction work? Yes/No

If Yes, measures taken to address the noise pollution:

J. Land acquisition

Is the land owner being paid before the commencement of the construction work? Yes/No
How much in Taka .....(i) Is he satisfied with the compensation? Yes/No. If Yes, take of the signature of the land-owner: signature.....date .....

K. Loss of agricultural lands

Is the land taken for construction of substation used agriculture? Yes/No
If Yes, how much of the land is used for agriculture? Amount .....sq.m

L. Disturbance to landscape

Is there any disturbance to landscaping due to construction of substation?
If Yes, measures taken for improving landscaping: (i) grassing on the slope (ii) tree plantation on the slope and vacant areas that is not affecting lines (iii) others.....

M. Health and Safety

Are adequate health and safety measures for personnel involved in the construction works taken? Yes/ No

If Yes, mention what have been taken:

i. .....
ii. .....
iii. .....

If No, mention the reason:

i. .....
ii. .....
iii. .....

Is there accident/injury happened to any personnel involved in the construction work? Yes/No

If Yes, describe in brief pf the type and reasons of accident:

Name and signature of the RE/any other person filling the form within the PBS:

Name: Designation: Signature: Date:

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BANGLADESH RURAL ELECTRIFICATION BOARD

Monitoring Checklist for use in Post Construction of a Substation

(Only the relevant items to be filled in)

Name and location address of the Substation (S/S):

Name of PBS:

A. Tree cutting and planting

Name of species and Number of trees cut and planted:

Tree cut		Tree planted	
Name of species	Age & numbers	Name of species	Numbers

Note: Under one species of tree, several ages of trees and corresponding numbers may be there. For example, under mango tree, 2 trees of 20 years old are required to cut; then write (20yrs, 2).

B. Soil erosion

Amount of area affected: (i)…….sq.m

C. Soil siltation

Amount of area affected: (i)…….sq.m

D. Drainage congestion

Amount of area affected: (i)…….sq.m

E. Water logging

Amount of area affected: (i)…….sq.m

F. Proneness of the site to flooding (to be filled from record taken from local people)

Flooding depth of the site after filling from annual flooding: (i) …….m, (ii) from 5 years frequency flood: ……m and (iii) from 10 years frequency flood:……m

G. Loss of soil fertility

Amount of agricultural lands suffered from soil siltation:

H. Disturbance to landscape

Is there any disturbance to landscaping due to construction of substation? Yes/No

If Yes, measures taken for improving landscaping: (i) grassing on the slope, (ii) tree plantation on the slope and vacant areas that is not affecting lines, (iii) others ……

I. Health and Safety

Are adequate health and safety measures for personnel involved in O&M of the substation? Yes/No

If Yes, mention what have been taken:

i. ……

ii. ……

If No, mention the reason:

i. ……

ii. ……

Is there accident/injury happened to any personnel involved in O&M of the substation? Yes/No

If Yes, describe in brief on the type and reasons of accident:

J. Service Improvement at the end of a financial year

Number connection- Residential……,Commercial:……,Industrial:……,Irrigation:……

Name and signature of the RE/any other person filling the form within the PBS:

Name: Designation: Signature: Date:

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RURAL ELECTRIFICATION BOARD, BANGLADESH

Environmental and Social Assessment and Management Template

Power Line Construction Power Distribution Line Identification Information

Name of PBS:.....	Name of Line:.....
Source of Finance:.....	Starting Location of Line:.....
Status of Construction: Proposed/Constructed/Under Construction/Renovated/ Taken over (Put Tic Marks)	

Description of Baseline Conditions of the Power Distribution Area

Sl No.	Questionnaires	Reporting
1.	**Length:** HT=.....km, LT=.....km, DUP=.....km, **Total=.....km**	
2.	**Route of Line:** .....%Paddy/Crop field, ...% Village, ...% Along Roads, ...% Wetlands ,.....%Industries, ...%Forests, ...%Residence	
3.	**Ecological Conditions:** ***Please Specify whether the Site Locations includes 12 Ecologically Critical Areas as follow:*** .....%Human Settlement, ...%Forest Sanctuary, ...%National Park, ...%Game Reserve, ...%Mangrove, ...%Forest Area, ...%Wetlands,.....%Wildlife Habitat,.....%Archeological Site, ...% Ancient Monument,.....% Biodiversity Area,.....%Similar Other Area	
4.	**Physio-Chemical Conditions:** Please Specify the Site Locations:.....%Urban, ...%Semi-urban, ...%Rural, ...%Remote, ...%Lowland, ...%Hilly,.....% Along Road, ...% Agriculture .....%Forest	
5.	**Human Interest Related Conditions:** Please **Tic Mark** whether the Site itself or the 50 m from the Center of the Line Area Contains the following: *Village Housing Structure/*Small Scale Agriculture/*Large Scale Agriculture/*Shops/ *Grazing Field/*Small Industry/*Large Scale Industry/*Water Bodies (River, Ponds, Lakes) /*Sites of Historical Interest/*Indigenous or Tribal Groups/*Natural habitats (Forests, Wetlands, etc.)/*Health Centers (Hospital, Medical Centre, etc.) /*Educational Centers (School, College, Madrasa, etc.)/*Social Centers (Club, Community center, etc.)/*Religious Centers (Mosque, Temple, Pagoda, Girja).	
6.	**Removal:** Whether the Site Involves Removal of Human Settlement/Tribal Groups/Indigenous Species.	
7.	**Compensation:** Whether the Site Involves Compensation.	
8.	**Participation:** Whether the Local Community are interested with the Site for Electricity.	

Description on Alternative Analysis

Sl. No.	Questionnaires	Reporting
1.	**Avoidance of Homestead Area:** Have there any alternatives to avoid homestead area having cash-in trees?	
2.	**Avoidance of Crossing:** Have there any alternative to avoid house/bamboo grove/river crossing?	
3.	**Superiority of Selected Route:** Whether Selected Route is superior to other Alternatives regarding Technical, Social, Economical and Environmental aspects.	

Initial Environmental Examination (IEE) of the Power Distribution Line

ENVIRONMENTAL PARAMETERS	INITIAL ENVIRONMENTAL EXAMINATION				
	Positive impact	No impact	Adverse Impact		
			Low	Moderate	Severe
Ecological Parameters					
1. Forest					
2. Tree Plantation/Cutting					
3. Fisheries					
4. Wetlands					
5. Wildlife					
Physico-chemical parameters					
6. Soil erosion and Siltation					
7. Drainage Congestion and water logging					
8. Regional hydrology / flooding					
9. Flood Control and Drainage					
10. Soil Characterizes/soil fertility					
11. Ground water table					
12. Water pollution					
13. Dust pollution					
14. Obstruction to waste water flow					
Socio-economic Parameters					
15. Land acquisition and Resettlement					
16. Women empowerment					

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ENVIRONMENTAL PARAMETERS	INITIAL ENVIRONMENTAL EXAMINATION				
	Positive impact	No impact	Adverse Impact		
			Low	Moderate	Severe
17. Health and Nutrition					
18. Loss of agricultural lands					
19. Employment opportunities					
20. Commercial and service facilities					
21. Industrial activities					
22. Irrigation facilities					
23. Land ownership pattern					
24. Change in land use					
25. Landscape					

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Identification of typical key issues of the Power Distribution Line

Environmental attributes/resources	Magnitude of Impacts			Type of impact				Temporal extent		Spatial extent		Mitiga-bility		Key Issues
	Severe	Moderate	Low	Direct	Indirect	Direct & Indirect	Cumulative	Long term	Short term	Widespread	Local	Fully	Partially	
Ecological Parameters														
1. Forest														
2. Tree Plantation/ Cutting														
3. Fisheries														
4. Wetlands														
5. Wildlife														
Physico-chemical parameters														
6. Soil erosion & siltation														
7. Drainage Congestion and water logging														
8. Regional hydrology/ flooding														
9. Flood Control and Drainage														
10. Soil Characterizes/ soil fertility														
11. Ground water table														
12. Water pollution														
13. Dust pollution														
14. Obstruction to waste water flow														
Socio-economic Parameters														
15. Land acquisition & Resettlement														
16. Women empowerment														
17. Health and Nutrition														
18. Loss of agricultural lands														
19. Employment opportunities														
20. Commercial and service facilities														
21. Industrial activities														
22. Irrigation facilities														
23. Land ownership pattern														
24. Change in land use														
25. Landscape														

Environmental Management Plans (EMPs) for the Power Line and Mitigation Measures

key issues	Potential impacts	Mitigation measures	Reporting against each mitigation measure
Forest	Clearing of trees/habitats of wild animals	1. Avoid such location, if possible	1.
		2. Protect the line areas by using guard cables, extensive tree plantation away for the Distribution Line, and in unavoidable cases confine the impact within the locality	2.
Tree Plantation/ Cutting	Clearing of trees	1. Conservation measures should be taken to protect **Cash-in,** Rare and Endangered species as recommend	1.
		2. **Covered cable** shall be used for saving cash-in trees	2.
	Tree plantation away from the Distribution Line.	3. Compensate the loss of trees by extensive plantation of new tress away from the Distribution Line	3.
Fisheries	Loss of breeding, nursery, and feeding ground in adjacent flood plain	1. Prevent erosion and accumulation of eroded soils into the adjacent flood plain	1.
	Reduction in open water fisheries	2. Prevent discharge of the construction debris/pollutants (cements, grease/oils into the adjacent lands/water bodies)	2.
Wetlands	Loss of breeding/nursery grounds for valuable natural species	1. Avoid heavy construction works and digging in low-lying lands/wetland as site	1.
Wildlife	Force the wild animals to move into the deep jungles	1. Avoid the location of the heavy line construction works and digging from the jungle/heritage of wild animals	1.
Soil erosion and siltation	Impacts on the agricultural top soil and agriculture product	1. Cover the ground surface with grass as soon as it is exposed at ground lines of poles	1.
	Increase the turbidity of adjacent water bodies affecting the yield of the water bodies	2. Perform the digging work in the dry season if possible.	2.
Drainage Congestion and	Affect the agricultural production	1. Avoid filling low-lying lands for construction of the Distribution Line	1.

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key issues	Potential impacts	Mitigation measures	Reporting against each mitigation measure
	Low-lying land becomes a mosquito breeding ground and spreads waterborne-diseases	2. Perform the raising of lands with adequate provision of water drainage from the poles and adequate provision of uninterrupted rainwater/floodwater drainage from the surrounding areas.	2.
Regional hydrology/ flooding	Affect the operation of the line and poles if flooded by rain/flood water	1. If possible and required raise the ground surface of the poles as much required above 100-years flood	1.
	Potential risk of the electric poles getting damaged from the flooding	2. At least place the longest poles above enough highest flood level.	2.
Flood Control and Drainage (if damaged)	Affect the operation of the line and poles if flooded by rain/flood water	1. If possible and required raise the ground surface of the poles as much required above 100-years flood	1.
	Potential risk of the electric poles getting damaged from the flooding	2. At least place the longest poles above enough highest flood level	2.
Soil Characterizes/ soil fertility	Damage the soil texture and quality	1. Prevent the discharge of the construction wastes (cement, oil/grease, and similar others into the adjacent lands)	1.
	Affect the agricultural yielding capacity of the soil (Indirect effect due to irrigation)	2. Develop proper waste management system including, collection and proper disposal of wastes, especially the PCBs oils.	2.
Ground water table (Indirect effect due to irrigation)	Affects the recharge of the ground water though very limited in scale, by converting ground into the hard surface.	1. Avoid concreting the surface as much as possible	1.
		2. Make the ground surface hard where abortively necessary	2.
Water pollution	Affect the quality of water making it unsuitable for aquatic biological use and human consumption	1. Collect and storage the construction wastes (cement, grease/oil, etc) and properly dispose of them with appropriate treatment (if required, especially for PCBs oils)	1.
Dust pollution/Noise pollution	Affect the health of the construction labors and surrounding inhabitants	1. Do proper and frequent watering to the construction grounds to subsidize dusts	1.
	Affect the photosynthesis of the trees	2. Avoid construction works in the sleeping time/night	2.
Obstruction to waste water flow	Raising of lands for establishment of poles, interrupting the flow of waste water from households /industries, etc	1. Avoid land-filling on the flow path of waste water/ rainwater/ flood water	1.
		2. Provide necessary structure if certainly required or not to avoid the above	2.
Health and Nutrition	Health risk associated with the handling/operation of the line equipment with oils	1. Take appropriate precautionary measures to avoid the risk associated with the operation and maintenance of power distribution line. A minimum vertical clearance as per Engineering and Staking Manual shall be maintained above the highest point of the affected households to minimize the health impact and to avoid accidents of 11 kV line.	1.
	Improvement in nutrient supply through increased agricultural production with land irrigation by improved power driven motor.	2. Ensure power supply as required in the dry season for agricultural land irrigation	2.
Loss of agricultural lands	Loss from occupying agricultural lands for heavy line construction works	1. Avoid agricultural land-taking and seek the alternative site if necessary.	1.
	Permanent loss of productive lands and associated crop-yields.		2.
Employment opportunities	Provide direct employments in the implementation and O&M of the power distribution lines	1. Ensure the employments for the poor with priority	1.
	Indirect employments from the industries, agriculture, and relevant commercial and service sectors.	2. Ensure uninterrupted power supply, specially during the peak hour/dry season	2.
Commercial and service facilities	Benefits from improved power supply in the commercial and service facilities	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
Industrial activities	Encourages people to establish industries of various sizes due to power supply	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
Irrigation facilities	Improved power driven motorized irrigation system	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
Land ownership pattern	Save the poor/marginal farmers from selling their lands due to increased earning from agricultural lands with improved irrigation.	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
Landscape	Change in landscape due to pre-construction and construction activities, land/slope cutting, clearing of vegetative covers, felling of trees, etc.	1. Improved the landscape with extensive tree plantation in open spaces, where possible and motivate people for plantation	1.

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Annexure- I

Leopold Graded EIA Matrix for the Power Lines without (Small letters) and with mitigation (Capital letters) of EMPs

Environmental attributes/resources	Relative weight age (wi)	No/insignificant impact		Positive Impact (vi) (See footnote for the abbreviations of columns)										Negative Impact (vi) (See footnote for the abbreviations of columns)										Graded value	
				Very low		Low		Moderate		High		Very high		Very low		Low		Moderate		High		Very high		$w_i v_i$	
Impact scale/rating/degree		0		+1		+2		+3		+4		+5		-1		-2		-3		-4		-5			
Abbreviation of Columns*	a	b	B	c	C	d	D	e	E	f	F	g	G	h	H	i	I	j	J	k	K	l	L	m	M
Ecological Parameters (25)																									
Forest**	10																								
Tree Plantation/Cutting	5																								
Fisheries	4																								
Wetlands	3																								
Wildlife	3																								
Physico-Chemical Parameters (35)																									
Soil erosion and siltation	3																								
Drainage Congestion and water logging	5																								
Regional hydrology / flooding	6																								
Flood control and drainage	6																								
Soil Characterizes/soil fertility	5																								
Ground water table	3																								
Water pollution	3																								
Dust pollution/Noise pollution	2																								
Obstruction to waste water flow	2																								
Socio-Economic Parameters (40)																									
Land Acquisition & Resettlement	5																								
Women empowerment	4																								
Health and Nutrition	4																								
Loss of agricultural lands	6																								
Employment opportunities	5																								
Commercial and service facilities	4																								
Industrial activities	4																								
Irrigation facilities	4																								
Land ownership pattern	2																								
Landscape	2																								
Total graded value (Σ. $w_i v_i$)																									

**** The same column has been divided into 2 sub-columns, where small letter is for without mitigation and capital letter is for with mitigation of EMPs.***

*****Conservation of forests and plantation activities compensates/minimizes more or less all other environmental degradation, hence regarded as the highest impact scale/rating/degree during assessment of impacts.***

<Signature, Date, Name, Seal of Key Personnel responsible for reporting and mitigation >

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BANGLADESH RURAL ELECTRIFICATION BOARD

Monitoring Checklist for Power Line Construction

Name and location address of the Power Line (P/L):

Name of PBS:

A. Tree Cut

Name of species	Age and number	Name of species	Age and number

Note: Under one species of tree, several ages of trees and corresponding numbers may be there, For example, under mango tree, 2 tree of 20 years old are required to cut; then write (20yrs, 2)

B. Branch Cut

Name of species and amount of branches cut

Name of species	Age, numbers and % of total branches required to cut

Note: Under one species of tree, several ages of trees and corresponding numbers and percentage of their branches may be required to cut. For example, under mango tree, 2 trees of 20 years old of which 20% branches are required to cut; then write (20yrs, 2, 20%). Similarly, for the same tree if 10 trees if age 30 years of which 40% are required to cut, and then write, (30%yrs, 20, 40%), and so on.

C. Health and Safety

Are adequate health and safety measures for personnel involved in the O&M of line taken? Yes/No

If Yes, mention what have been taken:

i. ...
ii. ...
iii. ...

If No, mention the reason:

i. ...
ii. ...
iii. ...

Is there accident/ injury happened to any personnel in the construction work? Yes/No

If Yes, describe in brief on the type and reasons of accident:

Name and signature of the RE/any other person filling the form within the PBS:
Name: Designation: Signature: Date:

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BANGLADESH RURAL ELECTRIFICATION BOARD
Monitoring Checklist for use in Post Construction of Power Line

Name and location address of the Power Line (P/L):
Name of PBS:

A. Tree Cut

Name of species	Age & numbers	Name of species	Age & numbers

Note: Under one species of tree, several ages of trees and corresponding numbers may be there. For example, under mango tree, 2 trees of 20 years old are required to cut; then write (20yrs, 2).

B. Branch Cut

Name of species and amount of branches cut

Name of species	Age, numbers and % of total branches required to cut

Note: Under one species of tree, several ages of trees and corresponding numbers and percentage of their branches may be required to cut. For example, under mango tree, 2 trees of 20 years old of which 20% branches are required to cut; then write (20yrs, 2, 20%). Similarly, for the same tree if 10 trees if age 30 years of which 40% are required to cut, and then write, (30%yrs, 20, 40%), and so on.

C. Health and Safety

Are adequate health and safety measures for personnel involved in the O&M of line taken? Yes/No

If Yes, mention what have been taken:

i. ...
ii. ...
iii. ...

If No, mention the reason:

i. ...
ii. ...
iii. ...

Is there accident/ injury happened to any personnel in the construction work? Yes/No

If Yes, describe in brief on the type and reasons of accident:

D. Service Improvement at the end of a financial year

Number Connection: Residential: .....Commercial:.....Industrial:.....Irrigation:.....

Name and signature of the RE/any other person filling the form within the PBS:

Name: Designation: Signature: Date:

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Annexure- L

BANGLADESH RURAL ELECTRIFICATION BOARD

Environmental and Social Assessment and Management Template for Building Construction

Building Identification Information

Name of PBS:.....	Name of Building:.....
Source of Finance:.....	Location of Building:.....
Status of Construction: Proposed/Constructed/Under Construction/Renovated/ Taken over (Put Tic Marks)	

Description of Baseline Conditions of Building Area

Sl No.	Questionnaires	Reporting
1.	**Land Type:** Whether the land is Agriculture/Fallow/ Homestead/ Natural Forest/Fruit Garden/Wetland/ Wildlife habitat/Fisheries land/Archeological site/ Ancient monument site/ Biodiversity area/ Non-productive high land.	
2.	**Current Uses of Land:** Whether the land is occupied by Paddy/Crop/Huts/Houses/Fruit trees/Ditch water/Sand/Fishes/ Grasses/Bushes/Bamboos/Non-productive Fallow land, etc.	
3.	**Land Owner:** Whether the landowner is Woman/Widow/Disabled	
4.	**Purchase Type:** Whether the land is owned by Acquisition/Private purchase of the PBS/Taken over	
5.	**Mode of compensation:** Whether the payment is in Cash/Kind/Exchange of Land/Donation.	
6.	**Value of Compensation:** Whether paid Market Value as per Govt. provision/Increment on Market Value as per Govt. Provision/Lower than Market Value/ Highest Market Value	
7.	**Land Height:** Height of the land from the nearest existing road (in meter)	
8.	**Surroundings:** Land is surrounded by Crop/Houses/Water/Trees/ Bamboos/Bazaar/Grass land/Industries/Roads/Fallow land.	
9.	**Distance:** Distance between Alternative-1 and 2 sites (in km)	

Description on Alternative Analysis

Sl. No.	Questionnaires	Reporting
1.	**Avoidance of Agriculture Land:** Have there any alternatives to avoid Agriculture land?	
2.	**Superiority of Selected Site:** Whether Selected Site is superior to other Alternatives regarding Technical, Social, Economical and Environmental aspects.	

Initial Environmental Examination (IEE) of the Building

ENVIRONMENTAL PARAMETERS	INITIAL ENVIRONMENTAL EXAMINATION				
	Positive impact	No impact	Adverse Impact		
			Low	Moderate	Severe
Ecological Parameters					
1. Forest					
2. Tree Plantation/Cutting					
3. Fisheries					
4. Wetlands					
5. Wildlife					
Physico-chemical parameters					
6. Soil erosion and siltation					
7. Drainage Congestion and water logging					
8. Regional hydrology / flooding					
9. Flood Control and Drainage					

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ENVIRONMENTAL PARAMETERS	INITIAL ENVIRONMENTAL EXAMINATION				
	Positive impact	No impact	Adverse Impact		
			Low	Moderate	Severe
10. Soil Characterizes/soil fertility					
11. Ground water table					
12. Water pollution					
13. Dust pollution					
14. Obstruction to waste water flow					
Socio-economic Parameters					
15. Land acquisition and Resettlement					
16. Women empowerment					
17. Health and Nutrition					
18. Loss of agricultural lands					
19. Employment opportunities					
20. Commercial and service facilities					
21. Industrial activities					
22. Irrigation facilities					
23. Land ownership pattern					
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Identification of typical key issues of the construction of Building

Environmental attributes/resources	Magnitude of Impacts			Type of impact				Temporal extent		Spatial extent		Mitiga-bility		Key Issues
	Severe	Moderate	Low	Direct	Indirect	Direct & Indirect	Cumulative	Long term	Short term	Widespread	Local	Fully	Partially	
Ecological Parameters														
1. Forest														
2. Tree Plantation/ Cutting														
3. Fisheries														
4. Wetlands														
5. Wildlife														
Physico-chemical parameters														
6. Soil erosion & siltation														
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20. Commercial and service facilities														
21. Industrial activities														
22. Irrigation facilities														
23. Land ownership pattern														
24. Change in land use														
25. Landscape														

Environmental Management Plans (EMPs) for the Building and Mitigation Reporting

Environmental key issues	Potential impacts	Mitigation measures	Reporting against each mitigation measure
Forest	Clearing of trees/habitats of wild animals	1. Avoid such location, if possible	1.
		2. Protect the Building areas by fencing with extensive indigenous (from local people's choice) tree plantation and confine the impact within the locality	2.
Tree and Branch Cutting	Loss of vegetation/habitats due to clearing	1. Disturb/clean vegetation/ habitats only where necessary	1.
		2. Reestablish vegetation through plantation	2.
	Loss of valuable trees/ranches due to cutting/clearing	3. Conservation measures should be taken to protect **Cash-in,** Rare and Endangered species as recommend	3.
		4. **Covered cable** shall be used for saving cash-in trees	4.
Tree Plantation	Protection of building area	1. Protect the areas by fencing with extensive indigenous tree plantation & confine the impact within the locality	1.

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	Tree plantation surrounding the building	2. Compensate the loss of trees by extensive plantation of new tress surrounding the building keeping sufficient clearance from building	2.
Fisheries	Loss of breeding, nursery and feeding ground in adjacent flood plain	1. Prevent erosion and accumulation of eroded soils into the adjacent flood plain	1.
	Reduction in open water fisheries	2. Prevent discharge of the construction debris/pollutants (cements, grease/oils into the adjacent lands/water bodies)	2.
Wetlands	Loss of breeding/nursery grounds for valuable natural species	1. Avoid low-lying lands/wetland as site for the construction of building	1.
Wildlife	Force the wild animals to move into the deep jungles	1. Avoid the location of the building from the jungle/heritage of wild animals	1.
Soil erosion and siltation	Rain-cut the slopes of building after its ground-stability and impact on the agricultural top soil and agriculture product	1. Stabilize the slopes by proper clay layering, compaction and grass-covering/small tree plantation	1.
	Eroded soils subsequently transported to agricultural lands affect the soil fertility and crop yield	2. Cover the ground surface with grass (Dubra) as soon as it is exposed	2.
	Increase the turbidity of adjacent water bodies affecting the fish yield of the water	3. Perform the construction work in the dry season if possible.	3.
Drainage Congestion and water logging	Building constructed on roadside drainage lines will affect the natural drainage of rain/flood water that may result in localized water logging	1. Avoid construction of buildings cutting natural drainage lines	1.
		2. Where this is unavoidable, provide alternative functional drainage lines	2.
	Affect the agricultural production	3. Avoid filling low-lying lands for construction of the building	3.
	Low-lying land becomes a mosquito breeding and disease spreading ground	4. Perform adequate provision of uninterrupted rainwater/ floodwater drainage from the surrounding areas.	4.
Regional hydrology/ flooding	Building constructed without flooding considerations may get inundated during abnormal flooding that affect the people	1. Raise the plinth level of building as much required above 100-years flood level	1.
Flood Control and Drainage (if damaged)	Affect the operation of the building with materials if flooded by rain/flood water	1. Raise the ground surface of the building as much required above 100-years flood	1.
	Potential risk of the building with electrical materials	2. At least place the electrical and other equipment on the hard surface above enough highest flood level	2.
Soil Characterizes/ soil fertility	Damage the soil texture and quality	1. Prevent the discharge of the construction wastes (cement, oil/grease, and similar others into the adjacent lands)	1.
		2. Aware farmers to adopt Integrated Pest Management (IPM) approach pest management.	2.
	Affect the agricultural yielding capacity of the soil in the long-run	3. Develop proper waste management system including, collection and proper disposal of wastes	3.
		4. Aware farmers to apply organic fertilizer in the fields	4.
Ground water table	Affects the recharge of the ground water though very limited in scale, by converting ground into the hard surface.	1. Avoid concreting the surface as much as possible	1.
		2. Make the ground surface hard where abortively necessary	2.
Water pollution	Affect the quality of water making it unsuitable for aquatic biological use and human consumption	1. Collect and storage the construction wastes (cement, grease/oil, etc) and properly dispose those with appropriate treatment (if required)	1.
	Deteriorate water quality	2. Use integrated pest management approach through M/O Agriculture to avoid the harmful pesticides	2.
Dust/ Noise pollution	Dust generated during carrying and filling of soils affect health of construction workers as well as nearby communities	1. Do watering to at regular interval to subside dusts during construction	1.
		2. Cover earth surface with grass after completion of earth-filling to avoid future dust generation	2.
	Affect the photosynthesis of the trees	3. Avoid construction works in the sleeping time/night	3.
Obstruction to waste water flow	Raising of lands for establishment of building, interrupting the flow of waste water from households/industries, etc.	1. Avoid land-filling on the flow path of waste water/ rainwater/flood water	1.
		2. Provide necessary structure if certainly required or not to avoid the above	2.

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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

Health and Nutrition	Health risk associated with the handling/operation of the building during and after construction and maintenance	1. Take appropriate precautionary measures to avoid the risk associated with the operation and maintenance of building. During works with equipment safety cloths, equipment and tools such as helmets, gloves, shoes, insulated tools, etc., shall be used including proper grounding as per respective safety instructions.	1.
	Improvement in nutrient supply through increased agricultural production with land irrigation by improved power driven motor.	2. Ensure power supply as required in the dry season for agricultural land irrigation	2.
	Public health and safety during camp construction	3. Camp should have proper fence around construction area/camp having pure water (Arsenic free) supply & hygienic sanitation system.	3.
	Construction works near public roads disrupt traffic movement	4. Implementation of traffic measures is necessary. Prepare detour to avoid traffic congestion. Red light should be provided to avoid accident	4.
		5. Signs and signals such as "Construction works ahead" / "Drive slow" must be fixed	5.
Land Acquisition	Deprival/dissatisfaction of land owners	1. Full market price shall be compensated as per 2007 Draft National Policy on Involuntary Resettlement	1.
	Ethnic minority/ Widows/Disables/ Hardcore poor	2. Avoid acquisition of land of such group of people and they should be involved in the project to share the benefits	2.
Loss of agricultural lands	Loss of agricultural lands permanently	1. Avoid agricultural lands (3-cropped-lands) as far as possible	1.
	Marginal poor farmers may be severely affected and leads to evolving localized social and political issues	2. Minimize lands by improved technical design for building	2.
Employment opportunities	Provide direct employments in the implementation and O&M of the building	1. Ensure the employments for the poor with priority	1.
	Indirect employments from the industries, agriculture, and relevant commercial and service sectors	2. Ensure uninterrupted power supply, specially during the peak hour/dry season	2.
Commercial and service facilities	Cultural property	1. Avoid damaging Mosque, Graveyard, Pagodas, Temples and other sensitive areas of cultural significance.	1.
	Benefits from improved power supply in the commercial and service facilities	2. Ensure uninterrupted power supply, specially during the peak hour/dry season	2.
Industrial activities	Encourages people to establish industries of various sizes due to power supply	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
		2. Ensure Environmental Clearance Certificate from DoE.	2.
Irrigation facilities	Improved power driven motorized irrigation system	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
	Lowering of groundwater table	2. Minimize the loss of abstracted groundwater by appropriate planning engineering measures through Ministry of Agriculture, Water Resources and Irrigation	2.
Land ownership pattern	Save the poor/marginal farmers from selling their lands due to increased earning from agricultural lands with improved irrigation	1. Ensure uninterrupted power supply, specially during the peak hour/dry season	1.
Landscape	Affect the landscape of the area by a piece of raised land	1. Beautifying the area by grass-covering, planting special species of trees that do not affect the building	1.
	Change in landscape due to pre-construction and construction activities, land/slope cutting, clearing of vegetative covers, felling of trees, etc.	2. Improved the landscape with extensive tree plantation along the fencing lines of the building and open spaces, where possible.	2.

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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০
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Leopold Graded EIA Matrix for the Building without (Small letters) and with mitigation (Capital letters) of EMPs

Environmental attributes/resources	Relative weight age (wi)	No/insignificant impact		Positive Impact (vi) (See footnote for the abbreviations of columns)										Negative Impact (vi) (See footnote for the abbreviations of columns)										Graded value	
				Very low		Low		Moderate		High		Very high		Very low		Low		Moderate		High		Very high		w_iv_i	
Impact scale/rating/degree		0		+1		+2		+3		+4		+5		-1		-2		-3		-4		-5			
Abbreviation of Columns*	a	b	B	c	C	d	D	e	E	f	F	g	G	h	H	i	I	j	J	k	K	l	L	m	M
Ecological Parameters (25)																									
Forest**	10																								
Tree Plantation/Cutting	5																								
Fisheries	4																								
Wetlands	3																								
Wildlife	3																								
Physico-Chemical Parameters (35)																									
Soil erosion and siltation	3																								
Drainage Congestion and water logging	5																								
Regional hydrology/ flooding	6																								
Flood Control and Drainage	6																								
Soil Characterizes/soil fertility	5																								
Ground water table	3																								
Water pollution	3																								
Dust pollution/Noise pollution	2																								
Obstruction to waste water flow	2																								
Socio-Economic Parameters (40)																									
Resettlement	5																								
Women empowerment	4																								
Health and Nutrition	4																								
Loss of agricultural lands	6																								
Employment opportunities	5																								
Commercial and service facilities	4																								
Industrial activities	4																								
Irrigation facilities	4																								
Land ownership pattern	2																								
Landscape	2																								
Total graded value ($\Sigma. w_iv_i$)																									

* *The same column has been divided into 2 sub-columns, where small letter is for without mitigation and capital letter is for with mitigation of EMPs.*

** *Conservation of forests and plantation activities compensates/minimizes more or less all other environmental degradation, hence regarded as the highest impact scale/rating/degree during assessment of impacts.*

<Signature, Date, Name, Seal of Key Personnel responsible for reporting and Mitigation>

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৬২১ তম বোর্ড সভায় অনুমোদিত সিদ্ধান্ত নং ১৭৭০০

(Kamrul Ahsan Mollik)
Asst. Secy. (Board), BREB.

RURAL ELECTRIFICATION BOARD, BANGLADESH
Template-Cum-Checklist for Environmental Impact Mitigation Measures

Environmental Impact Mitigation Responses

(To be filled up by the key personnel of respective field as Respondent half yearly)

1. Pre-construction, During Construction and After Construction Periods		
Identification Information		
Name of PBS:..... Source of Fund:	Name of Constructed Building/Line/Substation:	
Impacts	**Recommendation and Mitigation Measures**	**Responses**
i) Loss of vegetation or habitats due to clearing	1. Disturb / clean vegetation only where necessary and disturbance should be less.	1.
	2. Conservation measures should be taken to protect **Cash-in, Rare** and **Endangered** species as recommend.	2.
	3. Reestablish vegetation through plantation.	3.
ii) Loss of agricultural land /homestead areas as a result of permanent land acquisition	1. Avoid sub-station and residential construction on agricultural land. Select unproductive land.	1.
	2. Line construction should be done after crop harvest.	2.
iii) May have impact on protected land or ecological sensitive areas	1. Construction of sub-station and pole erection inside the protected areas and ecological sensitive areas should be avoided.	1.
iv) Dust development on air originated from the movement of vehicle or dust generated by construction activities	1. Regular water spray should be done to minimize dust development. Excess water extraction from ground water may create problem for irrigation, hence water should be bought from local ponds.	1.
v) Noise pollution generated due to construction works or due to vehicle & equipment movement	1. Construction works should be done during the working time and local residents should not be disturbed.	1.
	2. Staff and Workers should use the ear protection.	2.
vi) Construction works near public roads disrupt traffic movement	1. Implementation of traffic measures is necessary.	1.
	2. Prepare detour to avoid traffic congestion.	2.
	3. Proper lighting (red light at night) should be provided to avoid accident.	3.
	4 Signs and signals such as "Construction works ahead" / "Drive slow" must be fixed.	4.
vii) Public health and safety during camp construction	1. Camp should have proper fence around construction area/camp.	1.
	2. Camp should have pure water (Arsenic free) supply & hygienic sanitation system.	2.
viii) Flora and Fauna	1. Avoid to cut cash-in, rare trees; Pruning is recommended for big trees rather than cutting / felling.	1.
	2. Wild life habitats should be conserved; the bushes should not be cleared completely.	2.
ix) Cultural property	1. Avoid damaging Mosque, Graveyard, Pagodas, Temples and other sensitive areas of cultural significance.	1.
x) Ethnic minority	1. Occupation of land /homestead of ethnic people or minority should be avoided.	1.
	2. They should be involved in the project to share the benefits.	2.
2. Operation, Storage and Maintenance		
Identification Information		
Name of PBS:..... Source of Fund:	Name of the Mitigated Line:..... Name of the Mitigated Substation:..... Name of the Mitigated Campus/Store:	
i) Maintain safe and secure electricity supply for Social;	1. Irrigation of IRRI rice cultivation should be assured.	1.

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Economic and National development and benefits	2. Disruption of electricity supply will damage paddy cultivation.	2.
	3. Enjoyment of life after sun set for TV watching should not be disrupted by irregular electricity supply.	3.
ii) Check all poles used in Line regularly	1. Damaged wooden poles (by Birds or burnt) should be replaced as quickly as possible.	1.
	2. Minor damage due to woodpecker or burning may be repaired/maintained applying HCB (heavy creosoted boron) paste in the hole. "OSMO-Welt"- a repairing solution used in the USA may be used.	2.
	3. Hanging wires in low lying areas should be tighten particularly during rainy season to clear the obstruction of water vessel movement or longer pole should be installed instead of shorter one.	3.
	4. Any cracked or broken SPC pole shall be replaced immediately.	4.
	5. Loose guy wires, overloaded bent cross-arms should be replaced or repaired immediately.	5.
iii) Storage and Handling of Timber Products	1. Preservative treated timber products must be stored above ground and under cover where applicable as per REB Instruction 100-53.	1.
iv) Disposal of CCA Treated Wood Products (Greenish Poles, Anchor Logs and Cross arms)	1. Cutting must separate Broken/damaged/rotten portion and the sound portions must be reused. Completely unusable portions must not be burnt, and shall be disposed underground. CCA treated wood is very safe at underground and does not contaminate groundwater due to its non-leachability in absence of microbial and genobiotic activities, ultraviolet beam, torrential rain, weathering, shrinking, swelling, etc., at buried conditions.	1.
	2 Controlled Co-incineration Process (Borgnes and Rikhein 2005) or Electrodialytic Remediation Process (Christensen *et al.* 2005) or Recycling with "Chartherm" recently developed in Europe may be adopted for large-scale industrial recovery of CCA ingredients.	2.
v) Disposal of other Treated Wood Products (Blackish Poles, Anchor Cross arms, Yellowish Meter Boards, Packing Boxes, Conductor Reels, etc.)	1. Any disposal method may be applied, but underground disposal method shall be preferred. The sound portions of the timber products must be reused by making even furniture for domestic/indoor uses.	1.
vi) Disposal of PCBs containing Transformer Oils	1. All transformer oils must not be disposed or sold out without testing them the presence of PCBs. PCBs containing oils must be disposed after taking written permission from DOE.	1.
vii) Maintaining Transformer Repairing Workshops	1. The floor of repairing workshops must be concrete. Leakage of oils must be controlled very carefully. Accidental oil- spell shall be cleared with dry cotton and the used cotton wastes shall be burnt safely.	1.
viii) Regular Checking the Transformer and OCRs used in Lines and Substations	1. Any oil leakage shall be controlled / mitigated immediately by repairing the equipment; the oily ground shall be made clean by removing and disposing contaminated soil.	
ix) Maintenance of Head Quarters and Premises	1. Supply of fresh water must be ensured.	1.
	2. Daily household wastes must be disposed regularly.	2.
	3. Buildings, Latrines, Ponds, Yard must be kept clean, environmentally sound and sustainable conditions.	3.
	4. Dangerous constructions such as very Old Buildings, Asbestos Tin Mounted Buildings/Warehouses shall be dismantled /removed immediately.	4.
x) Safety Rules and Careful Storage of materials, Tools, Equipment and Chemicals	1. Safety rules and careful storage and Handling rules as code of practices in RES for all materials, tools, equipment and chemicals must be obeyed and implemented.	1.
	2. FIFO must be followed for issuing and using materials.	2.

<Signature, Date, Name, Seal of Key Personnel responsible for reporting and Mitigation>

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Asst. Secy. (Board), BREB

BANGLADESH RURAL ELECTRIFICATION BOARD
Compliance Verification Template-Cum-Checklist ensuring Storage and Maintenance of Substation, Power Lines, Storage Yard, Campus, Workshop

Date of Visit: . . . . Verified by: . . . . . .

Verification of Operation, Storage and Maintenance	
Identification Information	
Name of PBS:..... Source of Fund: .....(if any)	Name of the Mitigated Line:..... Name of the Mitigated Substation:..... Name of the Mitigated Campus/Store: .....

SL No.	Environmental Aspects/Item	Requirements	Verifiable observation against mitigation measures (Pl. Circle correct one)	Compliance Actions Recommended (Pl. Circle correct one)
1	Site Accommodation	Shall be above flood level, free draining without pending of water	A) PBS/SS is above Flood Level= Yes/No B) Drainage system is free= Yes/No C) Whether it is with Water logging= Yes/No	A) Requires land upgrading= Yes/No B) Requires adequate drainage system=Yes/No C) Requires reconstruction of A & B=Yes/No
2	Landscaping	Free draining forms top soiled; grassed; Bushes & trees; Trees & vegetation should be identified & protected.	A) Floor & Slopes of PBS/SS is well graded & compacted= Yes/No B) Soil fully/partially grass-covered= Yes/No C) Uncovered top soil is protected= Yes/No D) Yard is free from rubbish/debris=Yes/No E) Materials well stacked & marked=Yes/No	A) Requires upgrading of Floor/Slopes= Yes/No B) Requires grass-covering of soil= Yes/No C) Requires protection of top soil= Yes/No D) Requires removal of rubbish/debris=Yes/No E) Requires well stacking & marking=Yes/No
3	Security and Fire fighting	Adequate fire extinguishers in each building of the camp & sub-camp	A) Fire Extinguisher (FE) in each camp/floor= Yes/No B) Sign showing location of FE= Yes/No C) Trained Personnel for FE= Yes/No	A) Requires FE in each camp/floor= Yes/No B) Requires sign showing location of FE= Yes/No C) Requires Trained Personnel for FE= Yes/No
4	Water	Supply of deep tube well or treated water to offices & residences.	A) Supply of deep-tube well/treated water in campus= Yes/No B) Presence of Arsenic in shallow tube well = Yes/No C) Water Tank is regularly bleached= Yes/No	A) Requires supply of deep-tube well/treated water in campus= Yes/No B) Requires stopping of shallow tube well with Arsenic = Yes/No C) Requires regular bleaching of water tank= Yes/No
5	Sewerage	Sewerage & septic tanks should be maintained in proper working order.	A) Sewerage system OK in campus= Yes/No B) Septic tanks OK in each campus= Yes/No C) Sewerage/Septic tank Leakage= Yes/No	A) Requires proper sewerage system= Yes/No B) Requires proper septic tanks= Yes/No C) Requires repairing of Leakage= Yes/No
6	Rubbish	Rubbish beans with close fitting lids; should be kept clean. Rubbish should be removed to a fixed place.	A) Rubbish/Waste in open condition= Yes/No B) Rubbish/Waste openly burnt= Yes/No C) Covered/Open Dust beans used= Yes/No D) Waste disposed off regularly=Yes/No E) Waste disposed off properly=Yes/No F) Is interested on Bio-gas Plant= Yes/No.	A) Requires stopping open dumping= Yes/No B) Requires stopping open burning= Yes/No C) Requires Covered Dust beans= Yes/No D) Requires regular disposal=Yes/No E) Requires proper disposal=Yes/No F) Requires a Bio-gas Plant in campus= Yes/No.
7	Cleansing	Offices & grounds should be kept clean & tidy	A) Office/Warehouse/Ground/Residence externally free from dust, mud, spillages= Yes/No B) Walls, Signboard, Name plates, playing items, Tools, Machines of campus free from discoloration, breakage, rusting= Yes/No	A) Requires the Office/Warehouse/Ground/ Residence externally free from dust, mud, spillages= Yes/No B) Requires the Walls, Signboard, Name plates, playing items, Tools, Machines of campus free from discoloration, breakage, rusting= Yes/No
8	Waterway traffic	Provision for Boat & other water vessels traffic movement particularly when poles are erected in low lying areas should not be disturbed	A) Anywhere poles erected in lowland will disturb waterway traffic in raining season= Yes/No, Location---------- B) Anywhere sagging of wires will disturb waterway traffic in raining season= Yes/No, Location----------	A) Requires erection of poles in lowland in such way that will not disturb waterway traffic in raining season= Yes/No, Location---------- B) Requires to erect long poles to increase the height of sagging = Yes/No, Location----------

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SL No.	Environmental Aspects/Item	Requirements	Verifiable observation against mitigation measures (Pl. Circle correct one)	Compliance Actions Recommended (Pl. Circle correct one)
9	Debris disposal	Debris should be disposed in a fixed place	A) Debris disposed in a fixed place= Yes/No B) Is Covered Dust beans used = Yes/No C) Disposal of debris damages surrounding vegetation, crops & adjacent property = Yes/No D) Is interested on Bio-gas Plant= Yes/No.	A) Requires disposal in a fixed place= Yes/No B) Requires Covered Dust beans= Yes/No C) Requires stopping disposal of debris surrounding vegetation, crops & adjacent property = Yes/No D) Requires a Bio-gas Plant in campus= Yes/No.
10	Access to adjacent property	Little inconvenience as possible to property owners. Lands adjacent to the construction places should not be damaged.	A) Construction, maintenance, staying improper to adjacent land/property/ owner= Yes/No B) Activity damaging adjacent land/property = Yes/No C) Leakages/spillages from campus, sub-station, workshop, store are falling in adjacent land/property= Yes/No	A) Requires proper construction, maintenance, staying avoiding adjacent land/property/ owner= Yes/No B) Suggested stopping activity damaging to adjacent land/property = Yes/No C) Suggested stopping leakages/spillages from campus, sub-station, workshop, store to adjacent land/property= Yes/No
11	Borrow excavation construction methods	Traffic from borrow areas should control dust. Borrow materials should be from less productive sites. Borrow sites should be made for productive use	A) Hired land for construction or storage is unproductive= Yes/No B) Hired land is used most usefully= Yes/No C) Smoke/dust/noise created from the activity/vehicle of hired land = Yes/No D) Slopes of the construction work is stable (1:2) = Yes/No	A) Suggested to hire unproductive land for construction or storage = Yes/No B) Suggested fully use of hired land= Yes/No C) Suggested stopping smoke/dust/noise creating activity in hired land = Yes/No D) Suggested to make slopes of the construction work stable (1:2) = Yes/No
12	Cleansing	Offices. Store and campus should be kept clean and tidy.	A) Office/Warehouse/Residence internally free from dust, mud, spillages= Yes/No B) Internal Walls, Signboard, Name plates, Furniture, Office items, Tools, Machines of campus free from discoloration, breakage, rusting= Yes/No	A) Suggested to keep Office/Warehouse/ Residence internally free from dust, mud, spillages, etc.= Yes/No B) Suggested to keep internal Walls, Signboard, Name plates, Furniture, Office items, Tools, Machines of campus free from discoloration, breakage, rusting, etc.= Yes/No
13	Residence quarters	Proper and tidy conditions, adequate waste disposal system, ensure good house keeping practices	A) Residential Quarters are externally & internally free from dust, mud, paper, Waste, water leakage, spillages= Yes/No B) Waste disposal systems in residential area are acceptable (as required under Section No. 6 & 9 above)= Yes/No C) Maintenance/conservation/safety practices in residential areas are acceptable (as required under Section No. 3 for safety & fire extinguishing, Section No. 4 for supply of drinking water, Section No. 5 for sewerage)= Yes/No D) Residential areas & yards are inhabitable & charming (as required under Section No. 1 for Site Accommodation, Section No. 2 for Landscaping)= Yes/No E) Residential/Official Buildings are very old and environmentally very risky=Yes/No Location---------- Status----------	A) Suggested to keep Residential Quarters externally & internally free from dust, mud, paper, Waste, water leakage, spillages= Yes/No B) Suggested to make waste disposal systems in residential areas acceptable (as required under Section No. 6 & 9 above)= Yes/No C) Suggested to make maintenance/ conservation/ safety practices in residential areas acceptable (as required under Section No. 3 for safety & fire extinguishing, Section No. 4 for supply of drinking water, Section No. 5 for sewerage)= Yes/No D) Suggested to make residential areas & yards inhabitable & charming (as required under Section No. 1 for Site Accommodation, Section No. 2 for Landscaping)= Yes/No E) Suggested to remove/reconstruct very old & environmentally very risky residential/official buildings =Yes/No.
14	Power supply for irrigation	Maintain safe and secure electricity supply for Social; Economic and National development and benefits	A) Irrigation of IRRI rice cultivation is fully/partially assured= Yes/No B) Disruption of electricity supply damaging fully/partially paddy cultivation= Yes/No C) Enjoyment of life after sun set for TV watching is disrupted fully/partially by irregular electricity supply.	A) Suggested to assure irrigation=Yes/No B) Suggested to solve power disruption=Yes/No C) Suggested to solve power disruption=Yes/No
15	Pole maintenance in power lines	Checking of all poles used in lines regularly by the PBS personnel	A) Damaged wooden poles (by Birds or burnt) should be replaced as quickly as possible=yes/No B) Minor damage due to woodpecker or burning should be repaired/maintained applying HCB= Yes/No C) Hanging wires in low lying areas should be tighten or longer pole should be installed = Yes/No	A) Suggested to repair/replace poles=Yes/No Location:---------- B) Suggested to maintain applying HCB=Yes/No Location:---------- C) Suggested to tighten/use longer poles =Yes/No, Location:----------

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(Kamrul Ahsan Molla) Asst. Secy. (Board), BREB

SL No.	Environmental Aspects/Item	Requirements	Verifiable observation against mitigation measures (Pl. Circle correct one)	Compliance Actions Recommended (Pl. Circle correct one)
			D) Any cracked or broken SPC pole shall be replaced immediately= Yes/No E) Loose guy wires, overloaded bent cross-arms should be replaced or repaired immediately= Yes/No	D) Suggested to replace the SPC poles=Yes/No Location:---------- E) Suggested to replace/correct guy wires/cross-arms= Yes/No Location:----------
16	Storage and Handling of Timber Products	Storage and Handling of Timber Products properly	A) Preservative treated timber products must be stored above ground and under cover where applicable as per REB Instruction 100-53. **Is it followed?** =Yes/No	A) Suggested for proper stacking= Yes/No Items improperly stacked:---------- ---------- ----------
17	Disposal of CCA Treated Wooden Debris	Disposal of CCA Treated Wood Products (Greenish Poles, Anchor Logs and Cross arms) properly	A) Cutting must separate broken/damaged/ rotten portion and the sound portions must be reused. **Is it followed?**=Yes/No B) Completely unusable portions must not be burnt, and shall be disposed underground. **Is it followed?**=Yes/No	A) Suggested to cut broken/damaged/rotten portion for reusing sound portions=Yes/No B) Suggested for proper disposal of unusable portions= Yes/No
18	Disposal of other Wooden Debris	Disposal of other Treated Wood Products (Blackish Poles, Anchor Cross arms, Yellowish Meter Boards, Packing Boxes, Conductor Reels, etc.) properly	A) Any disposal method may be applied, but underground disposal method shall be preferred. The sound portions of the timber products must be reused by making even furniture for domestic/indoor uses. **Are these followed?**=Yes/No	A) Suggested to cut broken/damaged/rotten portion for disposal and sound portion for reuse=Yes/No
19	Disposal of PCBs containing Oils	Disposal of PCBs containing Transformer Oils properly	A) Transformer oils must not be disposed or sold out without testing the presence of PCBs. **Is it followed?** =Yes/No B) PCBs containing oils must be disposed after taking written permission from DOE. **Is it followed?**=Yes/No	A) Suggested to follow proper ways=Yes/No B) Suggested to stop such obnoxious disposal=Yes/No
20	Maintenance of Workshops	Maintaining Transformer Repairing Workshops properly	A) The floor of repairing workshops must be concrete. **Is it concrete?** =Yes/No B) Leakage of oils must be controlled very carefully. **Is it done?**=Yes/No C) Accidental oil- spell shall be cleared with dry cotton and the used cotton wastes shall be burnt safely. **Are these in practice?** =Yea/No	A) Suggested to make concrete floor=Yes/No B) Suggested to control leakage=Yes/No C) Suggested to follow the instructions=Yes/No
21	Checking Line Equipment	Regular Checking the Transformer and OCRs used in Lines and Substations	A) Any oil leakage shall be mitigated immediately by repairing the equipment. **Is it followed?**=Yes/No B) Oily ground shall be made clean by removing and disposing contaminated soil. **Is it followed?**=Yes/No	A) Suggested to follow instructions=Yes/No B) Suggested to clean oily ground=Yes/No
22	Dangerous Assets	Dismantle of dangerous assets	A) Dangerous Buildings/Asbestos-tin Mounted Buildings must be dismantled. **Is it essential?**=Yes/No	A) Suggested to declare unusable=Yes/No Building Types:----------
23	Safety Rules and Careful Storage	Safety Rules and Careful Storage of materials, Tools, Equipment and Chemicals	A) All Safety rules must be obeyed and implemented. **Is it followed?**=Yes/No B) FIFO must be followed for issuing and using materials. **Is it followed?**=Yes/No	A) Suggested to follow safety rules on tools/ materials/equipment/chemicals=Yes/No. B) Suggested to follow FIFO=Yes/No Materials:----------

Wild Life Act: *All personnel must be aware of the wild life act of Bangladesh. Officers are requested not to hunt and kill Snakes, Toads, Birds and other wild animals*

<Signature, Date, Name, Seal of Monitoring Officer at each page>

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BANGLADESH RURAL ELECTRIFICATION BOARD
Environmental Code of Practice (ECP) on Soil Erosion Control

1.0 PURPOSE
To establish and setforth an environmental code of practice (ECP) for controlling erosion of soil, which may occur due to rural electrification activities in Bangladesh. Soil erosion control is an ideal practice for managing the environment thus assuring sustainable development.

2.0 SCOPE
The provisions and procedures stipulated in this ECP shall be applicable for proper assessment and management of the environmental and social impacts related with soil erosion in RE System. This ECP contains step-by-step action item. It is very important to prevent and control soil erosion and to maintain the slope stability of the sub-station. The procedure of controlling soil erosion has been identified and mitigation measures have been given under **policy** below.

3.0 GENERAL
An Environmental Code of Practice (ECP) is necessary as policy guidelines and is essential for carrying out Environmental Assessments at BREB and PBS. After following the ECP, if problems are not solved then detail environmental remedial study will be necessary. The key personnel in Rural Electrification System responsible for designing, construction and maintenance of power lines, substation, and warehouses will implement this ECP with the monitoring of EMC, BREB.

4.0 POLICY
This is the general BREB-PBS policy that BREB shall set this procedure to control soil erosion. It will be necessary for BREB, off and on to visit the field and to observe the operation and maintenance for controlling soil erosion. For sub-station construction usually land is raised above flood level. During monsoon season in flooded areas particularly in the southern parts of the country soil erosion occurs both due to floodwater or wave action. Soil erosion from the steep slope is very common in the monsoon and may lead to ecological problem. To control soil erosion number of possible mitigation measures may be taken and some of these are mentioned below:

i) Climbing plants, which have sufficient root system and large number of leaves, may be planted on the slope and could be of some use to control erosion.

ii) Slope should be developed practicably in a suitable manner to adjust/accommodate land area as well as to control soil erosion to a satisfactory environmental approach.

iii) The bottom of the slope, drainage system should be done in a planned way for the flow of water and eroded soil should not move to crop field.

iv) Plantation of some medium size tree plant species in a systematic and planned way, which grow with little care in the steep slope habitat, is recommended. The herbaceous

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species, which are important to prevent soil erosion, are usually **grasses** (both with big leaves and small leaves and climbers with herbaceous and woody habit). The characteristics of the species, which are usually used for this purpose, are discussed in Table 1.

Table-1. Plant/Grass species chosen for soil erosion control

Grasses Scientific Name	Local / English Name	Characteristic features	Comments
Cynodon dactylon Fig.1	Local Name: Durba ghash	Originated in Asia (Wheeler 1950). Perennial, creeping by Stolons and Rhizomes, maximum height is 90 cm. Grows well at temperatures 30^0 to 40^0C. The rhizomes survive in drought well. Excellent for soil erosion control.	Spread by Stolons and rhizomes
Imperata cylindrica	Local Name: Ulukhar/Shan English Name: Alan-alang	Perennial, up to 20cm high with narrow and rigid leaf blades; roots penetrate well in alluvial soil. Grows well at temperatures 30 to 40^0C. Survive long droughts because of its rhizome, can tolerate a wide range of soils from strongly acid to slightly alkaline. It is effective in controlling soil erosion.	Spread readily by rhizomes
Axonopus compressus (Fig. 2)	Local Name: Carpet ghash English Name: Carpet grass	Flourish in moist soils; perennial; prefers moist sandy soil; robust and stoloniferous; leaves form dense mat over the surface of the ground; spreads quickly; maximum height is 15cm; goods for stabilizing slopes against erosion and also used for stabilizing banks	Grows quickly and stabilizes erosive soils

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