

SUMMARY INITIAL ENVIRONMENTAL EXAMINATION REPORT

Supplementary Appendix to the
Report and Recommendation of the President
To the Board of Directors

on the

ASSAM POWER SECTOR DEVELOPMENT PROGRAM

INDIA

This report was prepared by the Borrower and is not an
ADB document. The IEE is available on request.

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SUMMARY INITIAL ENVIRONMENTAL EXAMINATION

A. Introduction

1. The investment component of this Project include: (i) Improvement of the transmission system, (ii) improvement of the distribution system; (iii) intensification of rural electrification;(iv) improvement of the revenue management system; and (v) capacity building or Project implementation.

2. The investment component for improvement of the revenue management system focuses only on office administration works and therefore no environmental impact associated with this investment component. The capacity building component particularly on building environmental capacity of ASEB or the new institution will generate positive environmental impacts, such as improvement on handling environmental problems associated with ASEB's activities. The other three components are interlinking each other's, and these components are classified as B projects in accordance with the ADB's guideline on Environmental Assessment. The Initial Environmental Examinations (IEEs) for these investment components were prepared. This appendix is based on the information in the IEE reports submitted by the Government.

3. The improvement and establishment of transmission and distribution lines as well as the sub-stations are not subject of the India Environmental Impact Assessment Notification, and therefore no environmental impact assessment study is needed. However, these activities need to be implemented by taking into account the Air and water Act, as well as the Forestry Act.

B. Description of Project

4. The three investment components: (i) Improvement of the transmission system, (ii) improvement of the distribution system; and (iii) intensification of rural electrification will involve the following activities:

NO	Investment Component	DETAIL DESCRIPTION OF THE PROJECT
1	Tinsuka –Namrup Transmission line	Upgrading the existing Namrup substation with installing 2 auto transformers 220/132 KV Construction of 132 kV transmission line from Namrup to Tinsuka (44 km)
2	Nazira-Sibsagar Transmission line	Construction of Sibsagar sub-station 132/33 kV Construction of 132 kV transmission line from Nazira to Sibsagar
3	Lanka – Diphu Transmission line	Construction of new substation 132/33 kV at Diphu Construction of 132 kV transmission line from Lanka to Diphu (72 km)
4	Garmur-Nazira Transmission line	Upgrading of the existing substation 132/33 kV in Garmur (Jorhat). Construction of 132 kV transmission line from Nazira to Jorhat (80 km)
5	Jorhat-Bbokakhat transmission line	Construction of new substation 132/33

		kV at Bokakhat Construction of 132 kV transmission line from Jorhat to Bokakhat (76.7 km)
6	Sarusajai – Kahilipara transmission line	Upgrading the existing 220/132 substation in Sarusajai Construction 132 transmission line from Sarusajai to kahilipara (4 km)
7	Rowta – Depota transmission line	Doubling the existing 132 kV transmission line from Rangia to Depota via Rowta (190 km) Upgrading the existing 132/33 kV sub-stations in Rangia, Rowta, and Depota
8	Augmentation/Upgrading Sub-stations	Augmentation the existing 132/33 kV sub-stations in Samaguri, Dibrugarh, Barnagar, Gauripur, Pailaphol, Umrangshu, Haflong, Dhemaji and Agia
9	Construction new substations	Construction 132/33kV sub-stations in Moran, Bokakhat, Diphu, Golaghat, Boko, Namrup, Narangi, and the construction of 33/11 kV sub-station in Silchar

C. Description of Environmental Conditions of the Project Areas

5. The environmental conditions of the Project areas briefly as follow:

6. **Tinsuka –Namrup.** The transmission alignment is located in Tinsuka and Dibrugarh Districts in Upper Assam and bounded by Arunachal Pradesh Province. The Project area is characterized by irrigated agriculture land, paddy field, homestead, bamboo bushes, and tea plantation (e.g. Chotatingrai, Dhunseri, and Mahakali tea plantations). The soil is dominated by young alluvial. The ground water is around 4 meter. with potential yield varies from 15-75 m/sec.

7. **Nazira-Sibsagar.** The transmission alignment is located in Sibsagar District. The neighboring districts Dibrugarh to the East, Jorhat to the West, Brahmaputra to the North and Naga Hills to the South. The alignment run along areas dominated by un-irrigated agriculture land which mainly paddy with some bamboo bushes everywhere, particularly in the settlement area. The soil type mainly young alluvial. The ground water is generally found at shallow depth, and mostly less than 5 meter.

8. **Lanka – Diphu.** The transmission alignment falls under administration of Nagaon and Karbi Aglong District. The alignment is run in parallel with the existing 132 kV transmission line, along the border of Lumding Reserve forest in Nagaon District. The land use patterns along the alignment consist of grasses, arable land, un-irrigated agriculture land, and reserve forests. Topography of the Project area is hilly and plain between hills. The soil type is dominated by laterit. The ground water is found at shallow depth with water yield between 1 and 10 liter/sec.

9. **Garmur-Nazira.** The transmission alignment falls under Jorhat and Sibsagar Districts. The land use of the proposed alignment is dominated by agriculture land, mostly paddy field, bamboo bushes, arable land, and Dikhow river. The soil comprise of old alluvial type. Topography along the alignment is plain. Ground water available at shallow depth with water yield range from 4 to 14 liter/sec.
10. **Jorhat-Bbokakhat.** The transmission alignment falls under Golaghat and Jorhat Districts. The land use along the alignment is dominated by agriculture land (paddy field, un-irrigated crop, and tea plantation – Baijan, Domgaonm Badalipur, and Bongaon tea estate). The soil type is dominated by young and old alluvial. The ground water is found at the shallow depth, and the water yield range from 3 to 22 liter/sec. The topography of the area is mostly flat.
11. **Sarusajai – Kahilipara.** The alignment of the transmission line falls under Kamrup District. In the North, this Kamrup District is bounded by Bhutan. The topography is flat and some part is in hilly area. Soil is dominated by red loamy. The land use along the transmission alignment is mainly un-irrigated cropland, barren land, and settlement.
12. **Rowta – Depota.** The alignment is located in Kamrup, Darang and Sonitpur Districts. The alignment passes through terrain and is characterized by hilly and plain land area. The ground water is found in shallow depth.
13. **Sub-stations in Samaguri, Dibrugarh, Barnagar, Gauripur, Pailaphol, Umrangshu, Haflong, Dhemaji, Agia, Moran, Bokakhat, Diphu, Golaghat, Boko, Namrup, Narangi, and Silchar.** The location of all sub-station is near semi urban area with adequate distance from social infrastructures (school, clinic, market, and religious place). None of these substations located nearby environmentally and socially sensitive areas.

D. Screening Potential Impacts and Mitigation Measures

1. Expansion and Construction of Transmission and Distribution Lines

14. The screening of potential impacts identifies that there will be no significant environmental impact due to sitting of these transmission and distribution lines, because all these transmission lines are not located in nearby or within National Park or any sanctuaries or other designated sensitive areas. The distribution lines will be executed at the town area and mostly located at the existing facilities and along the roads.
15. The environmental impacts associated with the construction stage will be mostly caused by land and vegetation clearing. To minimize the impacts, vegetation clearing will be done only in the limited area. However, only few alignment of the transmission line will pass through area with vegetation coverage and only one transmission line goes through forest area. The other impact is a traffic disturbance if the transmission and distribution lines located along the existing roads. To minimize this impact a clear traffic sign will be placed in the construction area and if necessary re-route traffic will be employed. However, if the location of transmission lines far from the existing roads, temporary access road will need to be established. The environmental impacts associate with the establishment of temporary access roads will include compaction of soil structure and disruption of stream or other water bodies. To minimize the impact the contractors will be required to limit the load of truck in transporting construction equipment and materials. To avoid impacts to the water bodies, the following mitigation measures will be selected: (i) construction of temporary culverts to avoid water stagnation; or (ii) provide water-pump to deviate water flow to the nearest stream or canal. The good practice particularly

related to human safety during the installation of cable and transmission tower as well as distribution cable will be adopted and will be included in the bidding document.

16. While the impact associated with the operation of transmission and distribution lines will be none. However, human safety particularly related to electricity shock will be given adequate attention through public awareness program.

2. Construction and Augmentation of Sub-stations

17. There will be no environmental impacts due to sitting of the substation, because all of the sub-stations are not located in any environmentally sensitive area. However, the augmentation that involves replacement of transformers, breakers, and other equipment will contaminate ground water or other water bodies with oil. To minimize the impacts, used transformers and other equipment that contains oil and maybe PCBs will be collected and cleaned prior selling them to the authorized parties. The wastewater from cleaning of equipment will dispose through drainage with oil separator equipment. The oil from oil separator will be collected in the drum and will be marked and placed safely inside the substation area.

18. To avoid future environmental problems, it is also recommended that the Project will use only (i) free PCBs' transformers and conductors; and (ii) free Chlorofluorocarbons (CFCs) cooling system equipment. To avoid noise problems, it is recommended to locate the transformers at a reasonable distance so that noise level from the fence will not exceed 55dB at daytime and 45dB at nighttime. It is clear that the proposed mitigation measures are practical and manageable and all of these will be included in the loan covenants.

E. Institutional Arrangement and Monitoring EMP

1. Institutional Framework and Responsibility.

19. The proposed environmental management plan requires monitoring of environmental attributes both during construction and operational phase of the project. ASEB does not have a separate environmental cell for dealing with the various environmental issues. It is therefore necessary for ASEB to establish the social and environmental management cell to monitor and implement environmental good practices.

20. The social and environment management cell at should be headed by qualified and experienced engineer who is well aware of the project activities and its impacts on the environment. He should be able to give guidance to the personnel to adopt the environmental good practice. The duties of the social and environmental management cell will at least include: (i) Monitoring and implementation of mitigation measures; (ii) Prepare and implement environment policy guidelines and environmental good practices; (iii) Advising and coordinating regional environmental management cells activity towards effective environment management; (iv) Prepare environment and safety manual for the operation of sub-station; (v) Liaise with the Ministry of Environment Forest (MoEF), New Delhi and State Department of environment and sought their help to solve the environment related issues of the project implementation; (vi) Advise to project planning cell on environmental and social issues while route selection of the alignment at the planning stage to avoid negative environmental impact; (vii) Provide Training and awareness on environmental and social issues related to power transmission projects to the project staff.

21. The Implementation of mitigation measures during the construction stage will be the responsibility of the contractor. The environmental consultant that will be hired as part of the Project implementation, will assist ASEB or the new corporate to incorporate environmental mitigation measures into contractor contract documents.

2. Environmental Monitoring and Management Plan.

22. During the construction and operation phase of this project, the monitoring offices should be located at various strategic points along the transmission line route. During the construction phase, the prospective contractor should ensure that activities like handling of earthwork, clearing work, access road construction, putting proper traffic is done properly to have minimum impact. This should be monitored by the Engineer-In-Charge (ASEB) of the project implementation. Measures should include patrolling and thermo-vision scanning. Preventive maintenance should be carried out to identify and resolve problems related cooling oil, gaskets, circuit breakers, vibration measurements, and other monitoring activities at regular intervals.

23. For the substations, monitoring of oil contains in the water and monitoring the condition oil water separator should be done periodically to avoid water pollution. Other environmental good practices include noise abatement, maintaining hygienic conditions, maintenance of fire and safety equipment etc. Clearing of grass should be done periodically and medium height tree plantation around the substation wall should be done at the substation areas. Monitoring report should be prepared once in six months with corrective action plan for the problem areas.

3. Public Consultation

24. During the walkover environmental survey of the site the public consultation is made for addressing environment issues. The main purpose of these exercises is to know the Community's reaction to the perceived impact of proposed project on the people at individual and settlement level. It was felt during the public consultation process that most of the people are aware of the project and also they are not bothered about environmental issues, only some people are concerned about environmental issues mainly air and noise pollution

F. Findings

25. The screening environmental impacts shows that the construction and rehabilitation transmission and distribution lines will generate in-significant impact and the mitigation measures are available and manageable.

G. Conclusion

26. The overall IEE finding is that the Project will not cause significant environmental problem and the potential adverse impart are manageable. However, continued monitoring should be carried out.