

Initial Environmental Examination

Project Number: 51308-009
June 2022

India: Tripura Power Distribution Strengthening and
Generation Efficiency Improvement Project

Tripura State Electricity Corporation Limited
Distribution Component

Prepared by Tripura State Electricity Corporation Limited, Department of Power, Government of
India for the Asian Development Bank

EXECUTIVE SUMMARY

1. The Government of India has requested the Asian Development Bank (ADB) to finance a project comprising distribution strengthening and generation efficiency improvement to help improve energy security, power quality, efficiency, and resilience of the power sector in the state of Tripura. The project will be implemented over five years with a completion date by December 2027.

2. Under Output 2 and Output 3 of this project, Tripura State Electrical Corporation Limited (TSECL) will develop a more resilient distribution network, establish a test laboratory, and install smart meters, including advanced metering infrastructure. The proposed distribution component will strengthen and modernize the power distribution network, reduce technical losses, and increase the reliability of the distribution network of TSECL. To achieve this objective, the scope of the distribution component includes: (i) renovate and modernize 27 existing 33/11 kilovolts (kV) substations, including control room equipment and protection systems; (ii) install 150 auto-reclosers, 350 sectionalizers, and 2,000 fault passage indicators at 11 kV and 33 kV lines, supply of cable fault locator and test van; (iii) install and upgrade 2,667 km of 11 kV, 33 kV and low tension distribution lines including the supply and installation of 100 ring main units associated with underground cabling and a high voltage distribution system (HVDS) pilot for agricultural feeders in areas of sparse settlement to also address issues of unauthorized power tapping in one electricity subdivision, (iv) set up a modern test laboratory for testing and maintenance of distribution equipment and to act as a training center for TSECL staff and engineers; and (v) replacement of 100,000 household meters with smart meters and advanced metering infrastructure for smart metering systems establishment. ADB will finance these components through a project loan. Successful implementation of the project will improve reliability of supply to residential and commercial customers in the state. A reliable electricity supply will lead to social and economic benefits and improved conditions for schools, hospitals, and other social services. The executing agency for the ADB loan will be the Power Department, Government of Tripura. The implementing agency for the distribution component will be TSECL.

3. This initial environmental examination (IEE), which includes the environmental management plan (EMP) for the distribution components of the project, is prepared in compliance with ADB's Safeguard Policy Statement (2009), and national environmental, health and safety requirements. Per ADB's Safeguard Policy Statement (2009), the project is categorized as A for environment due to the generation component under Output 1 having the potential to result in significant adverse irreversible or diverse environmental impacts and requiring an Environmental Impact Assessment. Output 2 and Output 3 are unlikely to cause any such environmental impacts due to the following facts: (i) overhead distribution components are mostly in semi-urban and rural areas which do not support high biodiversity values; no protected areas or internationally or nationally recognized biodiversity areas or physical cultural resources will be passed through by new distribution lines; (ii) some distribution components are located in dense urban/city areas which will involve conversion from overhead to underground lines, again no protected areas or internationally or nationally recognized biodiversity areas or physical cultural resources will be passed through by new distribution lines; and (iii) there will not be any major, large-scale civil or structural works involved in the distribution component, most works will be electrical and mechanical. Construction of a new building of up to 3 floors for the test laboratory will be the largest civil or structural works. Overall construction, operation and maintenance of the distribution components is likely to give rise to direct, indirect, and, induced environmental impacts that are mostly minor/low in magnitude, site-specific, generally reversible, temporary and of short duration primarily during construction works. Potential impacts and risks can be easily mitigated through the adoption of international good practices for environmental management as set out in the

International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines including the General Guidelines and those on Electric Power Transmission and Distribution dated 30 April 2007. The selection and design of new equipment will comply with national requirements as well as considering international good practice per the IFC EHS Guidelines particularly with respect to avoiding the use of polychlorinated biphenyl (PCB) oil in the purchase of new transformers (already banned in India) and the use of all asbestos containing materials in the new construction. Therefore, significant adverse irreversible, diverse, or unprecedented environmental impacts are unlikely to arise for Outputs 2 and 3 and this IEE was prepared to document the environmental assessment.

4. Of the protected areas in Tripura, Bison National Park in Trishna Wildlife Sanctuary, Clouded Leopard National Park in Sepahijala Wildlife Sanctuary and Rudrasagar Lake Ramsar site support critical habitat. The state supports critical habitat for two species and possible critical habitat for seven species mostly associated with habitat in and around the wildlife sanctuaries. Within a 10 km project area of influence (PAI) around the 27 existing substations and test laboratory site, Rajnagar 33/11 kV substation is the closest to a legally protected area (Trishna Wildlife Sanctuary) at 633m, but it is outside the notified ecologically sensitive zone (ESZ). Panisagar 33/11 KV substation is 2.7 km away from Rowa Wildlife Sanctuary and its notified ESZ. Melaghar 33/11 kV) is 2.3km from Rudrasagar Lake Important Bird Area and Ramsar Site, Jatanbari substation is about 6km from Gumti Wildlife Sanctuary and about 6.5 km from Damboor Lake which is a proposed Ramsar Site, and the test laboratory is about 6.5 km from Sepahijala Wildlife Sanctuary including the Clouded Leopard National Park. Within 10 km of the 27 existing substations the nearest notable Archaeological Survey of India (ASI) and Government of Tripura protected cultural resources are the state protected Ujjayanta Palace at Agartala (823 m from Netaji Subhas Regional Coaching Centre (NSRCC) substation); an ASI Ancient Mound (Shyamsundar Ashram Tilla) at Jolaibari (1.4 km from Jolaibari substation); the state protected Neermahal Water Palace at Melaghar (2.9 km from Melaghar substation); and ASI sculptures and rock-cut reliefs at Unakoti (7.5 km from Kailasahar substation). All these works are on modified habitat within the boundaries of existing substations and a sub-divisional office and no critical habitat species or chance finds are likely to be encountered within the sites.

5. The principles that have been (and will be) adopted by TSECL for the selection of route alignments of the various distribution lines are: (i) use existing alignments and/or the road Right of Ways (ROW) wherever available; (ii) avoid legally protected areas including national parks, wildlife sanctuaries, protected ASI and Government of Tripura monuments; (iii) avoid other internationally and nationally recognized sites such as Key Biodiversity Areas, Important Bird Areas, ESZ, notified forest areas including protected forests, reserve forests and proposed reserved forests, and the regulated area associated with protected ASI and Government of Tripura monuments; and (iv) minimize damage to existing trees and properties encroaching into existing RoWs ensuring safety clearances are maintained. Undergrounding and conversion of existing bare conductors to covered and aerial bundled conductors shall be helpful in reducing existing electrocution risks to wild animals. None of the new indicative or existing 33/11 kV route alignments are passing (or will pass) through legally protected areas or their ESZ notified under the Wildlife (Protection) Act, 1972 although some are within 10km and very near to the boundary of the ESZ e.g., 11kV Digalbagh Feeder is 147m from Rowa Wildlife Sanctuary ESZ. Rudrasagar Lake is also avoided. Neither are any new indicative or existing 33/11 kV distribution lines passing through notified forest areas or impacting on the regulated zone (up to 300m from) ASI or Government of Tripura protected monuments. Some existing low-tension distribution lines may route alongside roads that pass through or adjacent to notified forest areas and protected monuments (e.g., Boxarnagar Electrical Sub-Division supports forest range and has low-tension lines adjacent to the Boxarnagar Stupa, an ASI protected monument) — in such locations once

the low-tension lines have been mapped site-specific assessment and management planning with full time ecological and/or archaeological supervision will be required with rerouting outside the area of concern or undergrounding rather than reconductoring the preferred option. Since the distribution routes assessed are only indicative and will not be finalized until the contractors are on board, during project implementation this IEE and EMP will need to be updated and cleared by ADB with any government clearances or permissions obtained before distribution routings are approved by TSECL and works commence.

6. Site visits (reconnaissance surveys) to sample distribution lines were conducted based on a district sensitivity matrix developed for the distribution component; approximately 93.5 ckm (35%) of the 33 kV lines (both underground and overground covered conductor) out of a total length 270 ckm, 102.6 ckm (7%) of 11 kV lines (including both covered conductor and underground cables) out of a total 1,497.46 ckm and 80 ckm (9%) of 0.4 kV lines out of a total of 900 km were surveyed. The total km visited was 276.1km out of the total 2,667 km, a 10% sample. No critical habitat species were encountered during site visits; but District Forest Officials have reported sightings of the two primate species and the following may occasionally be encountered in modified habitat along the distribution lines for which mitigation measures include pre-construction ecological checks prior to tree cutting or earthwork, prohibiting poaching and firewood collection by construction workers, the adoption of bird and primate sensitive design to minimize electrocution risk etc. Their presence or absence is to be confirmed by field ecologists during route surveys: *Aquilaria malaccensis* (Agarwood, a globally critically endangered species) where trees present especially in plantation, *Nilssononia nigricans* (Black Softshell Turtle, a globally critically endangered species) if temple ponds crossed, *Gyps bengalensis* (White-rumped Vulture, a globally critically endangered and Schedule I species under the Wild Life Act, 1972), *Manis pentadactyla* (Chinese pangolin, a globally critically endangered and Schedule I species under the Wild Life Act, 1972) in rural areas, and *Trachypithecus phayrei* (Phayre's Leaf Monkey, a globally endangered and Schedule I species under the Wild Life Act, 1972) and *Macaca leonina* (Northern Pig Tailed Macaque, a globally vulnerable and Schedule II Part 1 species under the Wild Life Act, 1972) in rural areas/plantation especially within 10km of Wildlife Sanctuaries. In Kanchanpur subdivision of North Tripura district, definite critical habitat for the critically endangered, endemic gecko *Cyrtodactylus montanus* is found with records including those from rocky roadside cuttings adjacent forest areas above 600 m asl. Ecology survey would be needed to confirm its presence or absence; but no distribution line works are proposed in its mapped area of occurrence in the Jampui Hills block, starting about 1.75km south of Vangmung substation. For all distribution lines the District Forest Officers will be actively engaged by TSECL and the contractors throughout project implementation. A wildlife identification and rescue protocol will be adopted, to be further developed in consultation with forest and wildlife officials as per site-specific requirements with all vegetation clearance and earthworks undertaken under ecological supervision. No physical cultural resources were identified along the sample distribution lines that would be directly impacted, but care will need to be taken to avoid damage to those adjacent to the route alignment. Many existing distribution lines to be reconducted especially low-tension lines were observed to be passing over houses with poles located in private compounds whilst some were seen to cross school compounds or playgrounds. To uphold safety clearances and minimize community health and safety risks during operation rerouting is required as part of reconductoring works with great care taken in dismantling the existing conductors.

7. Potential environmental impacts were identified in relation to the design, location, construction, operation and maintenance of the distribution infrastructure and mitigation measures have been developed in respect of all potentially negative impacts identified. Potential construction impacts relate to disturbance of land in the substation and test laboratory footprints and the ROW of distribution lines as well as adjacent communities with pollution, health and safety

risks to workers and the community if the construction activities are not well managed by TSECL and their contractors. Pollution, health and safety risks to workers and the community will remain during operation and maintenance works. Environmental audit of the 27 existing substations identified the presence of old equipment, particularly transformers that leak and which may contain PCB oil, depending on the date of manufacture and schedule of oil replacement. Based on assessment against United Nations Industrial Development Organization (UNIDO) guidance at least one substation was identified as being at risk of having transformers containing PCBs. Any removal, storage, and disposal of phased out transformers will be done in accordance with international good practice and the Government of India's regulations. Outside of the scope of the distribution component, Government of India regulations already require TSECL to complete the de-chlorination or the removal of all PCB-contaminated transformers before 31 December 2025.

8. Small informal group community consultations were conducted during preparation of the IEE, including at existing substations, the test laboratory and along sample distribution line routes for consultees to express any views on environmental and social conditions, or concerns they had regarding the distribution components. In total 174 participants (28% female and 72% male) were consulted for the distribution component. The consultations were conducted along sample distribution lines visited, during substation audits, and at the test laboratory site. The consultations were held between December 2020 and May 2022. Meaningful consultations were limited because of COVID-19 advisories and large gatherings not being permissible at the time of site visits. Further, for rural substations, being in more isolated locations away from village centers adjacent receptors were either absent or few, resulting in a lower rate of consultation participation. Since consultations were primarily based on on-the-spot discussions women participants were very rare, making female representation poor for the distribution component. No significant environmental and social concerns were raised, although in rural areas existing unemployment and water availability issues were reported. Overall, all consulted were looking forward to the benefits of improved electricity services. This IEE will be made available by TSECL to the public and will be disclosed to a wider audience locally (with executive summary translated into Bengali language) via the TSECL website, TSECL offices (Head Office, Circle and Division), all 27 existing substations, and other construction site offices. Meaningful consultation will be continued during implementation of the distribution component to ensure all interested stakeholders and affected local communities are fully engaged, have an opportunity to raise any concerns before the commencement of works, and can inform the development and implementation of final routings of distribution lines etc. To address distribution component-specific issues from affected persons, a Grievance Redress Mechanism will be established by TSECL, the details of which will be disseminated to local communities during future consultations.

9. An EMP has been prepared for the distribution component. The EMP includes (i) corrective action for existing facilities i.e. 27 existing substations; (ii) mitigation measures for environmental impacts during implementation, including ensuring detailed designs take into account biodiversity and physical cultural resource measures, the high seismic risk of the state, and climate change adaptation measures; upholding safety clearances especially where existing lines pass over houses rerouting as needed, and avoiding passing over school compounds or playgrounds; adhering to electromagnetic field (EMF) exposure, dust and noise guideline levels; ensuring drinking water quality for workers; approving contractor's wildlife identification and rescue protocol, pollution prevention, solid and hazardous waste management, and health and safety management plans prior to works; prohibiting PCB use in new transformers and asbestos containing materials in construction; and, community awareness raising activities by TSECL and the contractors on the health and safety risks of distribution infrastructure; and (iii) an environmental monitoring program, including monitoring of health and safety incidents. The responsible entity for mitigation, monitoring, and reporting is TSECL. Mitigation measures will be

assured by a program of environmental supervision and monitoring to be conducted during the construction and operation stages. Any unanticipated impacts or requirements for corrective action during implementation of the distribution component will be reported by TSECL to ADB.

10. TSECL will establish a safeguard unit initially as part of the project management unit to support with EMP implementation, supervision, and monitoring during both construction and operation. This will be staffed with a suitably qualified and experienced Environmental and Social Safeguard Officer and a Health and Safety Officer (with professional certification) both with 12-15 years of experience. Project implementation consultants will include an Environment Consultant (with ecological expertise) and Health and Safety Consultant with professional certification to assist with site-specific assessment and provide on-site support, as well as capacity building and trainings. Further, the Engineering, Procurement and Construction (EPC) Contractor will be required to have suitably qualified and experienced, dedicated on-site counterpart staff including an Environment Manager and Health and Safety Manager with professional certification supported by several health and safety stewards on-site. ADB TA consultants will help TSECL develop standard operating procedures (SOP) addressing the environment, health and safety impacts and risks of its substations, test laboratory and maintenance including recording of any occupational and community health and safety incidents.

11. This IEE including EMP are considered sufficient to meet the environmental assessment requirements of ADB for the distribution component. However, following selection of final route alignments but before the commencement of works, and, in case of any unanticipated scope or design changes occurring during project implementation, this IEE and EMP will be updated by TSECL and cleared by ADB.