Executive Summary

Project Overview

The National Transmission Network Service Provider (Private) Limited a successor company responsible for the National Transmission Network of Ceylon Electricity Board (CEB) proposes the development of a 220 kV high-voltage transmission line extending approximately 77 km from New Habarana Switching Station (SS) in Anuradhapura District, to the Kappalthurai Grid Substation (GS) in the Trincomalee District. This transmission line will strengthen the Eastern Province grid, facilitate power evacuation from renewable energy sources, and reinforce long-distance transmission capacity within Sri Lanka's national grid. The aging Anuradhapura - Trincomalee 132 kV line poses reliability risks. To meet growing demand from Trincomalee's port and industries, a new 220 kV line from New Habarana to Kappalthurai is proposed, enabling 2,000 MW evacuation and ensuring reliable power supply. The project forms part of the government's strategic program to expand renewable energy integration, reduce fossil fuel dependency, and improve energy security. The Asian Infrastructure Investment Bank (AIIB) has been identified as the potential funding agency for this project.

Purpose of the Environmental and Social Impact Assessment (ESIA) and Project Scope

This ESIA was prepared to assess, avoid, minimize, and manage environmental and social risks associated with the proposed transmission line, its substations, and associated activities. The assessment complies with Sri Lanka's National Environmental Act (NEA), Sri Lanka Electricity Act, and the AIIB Environmental and Social Framework (ESF). It addresses direct, indirect, and cumulative impacts of the transmission line, construction of access roads, and related facilities. The ESIA provides a comprehensive evaluation of baseline environmental and social conditions, anticipated project impacts, and mitigation measures, forming the basis for the project's Environmental and Social Management Plan (ESMP).

Project Justification

Sri Lanka's annual electricity demand continues to grow at 5–6% per year, driven by urbanization, industrial development, and rising household consumption. Expanding renewable energy capacity is a government priority under its long-term energy plan. The New Habarana–Kappalthurai Transmission line is essential to transmit power from multiple upcoming renewable energy projects in the region and to improve the resilience of the Eastern Province grid. Without this line, significant renewable capacity cannot be effectively integrated into the national grid. The project activities will be carried out adhering to the local and AIIB standards, its environmental

consequences will be minimal, hence the project is therefore both technically and strategically justified.

Environmental and Social Baseline Conditions

The line corridor traverses' diverse landscapes including dry mixed evergreen forests, riverine habitats, scrublands, paddy fields, home gardens, and degraded lands. The biological baseline confirms the presence of dry zone flora and fauna, including several endemic and nationally threatened species. Certain sections of the transmission line overlap with ecologically sensitive habitats such as riparian forests and seasonal wetlands.

The socio-economic environment is predominantly rural, with livelihoods based on agriculture, livestock, and seasonal wage labor. Settlements, home gardens, religious sites, schools, and public infrastructure are present along the road network. Seasonal flooding and drought are recurrent natural phenomena in the area.

These baseline conditions were identified through extensive site reconnaissance, household surveys, and community and line agency consultations. Community and line agency concerns were thoroughly investigated, during these reconnaissance missions.

Key Environmental and Social Impacts

- **Physical Environment:** The project's construction phase will generate localized environmental disturbances, including dust emissions, noise, vibration, and air quality deterioration due to heavy machinery and vehicle movement. Soil compaction and erosion risks are high in paddy lands and scrublands, particularly during excavation and tower erection. Alterations in surface runoff and interference with minor tanks, canals, and drainage networks may occur, though impacts can be mitigated with proper site-specific measures. Waste accumulation, traffic congestion from material transport, and potential geohazards in soft soils also present risks. During operation, impacts are minimal, but visual changes to the landscape and minor restrictions on land use under the Right of Way (RoW) will persist.
- **Biological Environment:** Vegetation clearance within the 35 m RoW (totaling ~271 ha) will affect paddy fields (43.7%), sparse forests (25.8%), scrublands (16.1%), home gardens (12.6%), and marshlands. Approximately 8,197 trees will be felled, including ecologically significant species. Habitat loss and fragmentation may affect small mammals, reptiles, and ground-nesting birds, while the removal of forest edge vegetation could exacerbate human-wildlife interactions near Hurulu Eco Park. Several endemic and nationally threatened flora and fauna species occur in the project area, requiring special protection measures. During operation, potential avifauna collisions with conductors and the risk of invasive plant colonization along cleared RoW are recognized concerns.
- **Aquatic Resources:** The alignment crosses multiple irrigation canals, streams, and segments of the Mahaweli River basin. Construction activities risk sedimentation, water

quality degradation, and localized flow disruptions. Marshland habitats (0.94 ha) near towers AP30 and AP46 are ecologically sensitive and may experience drainage impacts from construction access. Careful tower siting, sediment barriers, and controlled material storage are planned to prevent significant aquatic disturbance.

- **Social Impacts:** Large-scale displacement is not anticipated, but some houses, commercial units, a community structure, wells, fences, and auxiliary structures fall within the RoW and may require compensation or relocation support. Approximately 52,115 people live within the 22 affected GNDs, with livelihoods primarily dependent on agriculture and fisheries. Farmers may face temporary disruptions due to tower foundation placement and construction access routes, as well as permanent land loss where towers are installed in active paddy lands and home gardens. The total number of affected land lots due to the project is 690 belonging to 678 people. Vulnerable groups, including women-headed households and small-scale farmers, may experience disproportionate livelihood impacts. Labor influx during construction poses risks of social tension, gender-based violence, and pressure on local services if not managed effectively.
- **Cultural Heritage:** While several important religious and archaeological sites exist in the broader region (e.g., Thirukonsewaram Temple, Velgam Vehera, and Medirigiriya), none of them lie within the project's Area of Influence (AoI). Consequently, direct impacts on cultural heritage are not anticipated. Nevertheless, a "chance find" procedure has been built into the Environmental and Social Management Plan (ESMP) to safeguard against accidental discoveries of artifacts during excavation.
- **Climate Risk:** Climate risk assessments indicate the project area is prone to seasonal droughts, intense rainfall, flooding, high winds, and lightning activity. Under The Intergovernmental Panel on Climate Change (IPCC) climate scenarios, increases in flood frequency and temperature extremes are projected. Hydrological modeling suggests potential flood level increases, particularly under extreme climate scenarios, necessitating elevated tower foundations in low-lying sections. Accordingly, transmission line structures are being designed to withstand extreme weather, strong winds, and future climate variability, in compliance with AIIB and national climate adaptation standards.

Associated Facilities

The 220 kV Sampur–Kappalthurai Transmission Line has been identified as an Associated Facility (AF) of the New Habarana–Kappalthurai (NH–K) Transmission Line Project under the AIIB ESF, as both projects are required to facilitate the evacuation and transmission of renewable energy from the Eastern Province to the national grid. The ESIA considered cumulative impacts arising from the combined implementation of the two projects, including temporary construction disturbances, ecological impacts, and community health and safety risks. These impacts are expected to be localized and manageable through the respective ESMPs, while the projects will collectively deliver significant benefits through improved grid reliability, renewable energy integration, and reduced greenhouse gas emissions.

Mitigation Measures and Environmental & Social Management Plan (ESMP)

Mitigation measures have been integrated through mitigation-by-design and detailed in the ESMP. Key measures include:

- Route alignment optimization to avoid settlements and sensitive habitats.
- Including 5.48 m clearance and mitigation-by-design (tower extensions) wherever the existing structures are located within the 6m either side from the centerline to minimize the impact.
- Compensation for land, crops, and structures at replacement cost under the Electricity Act and AIIB standards.
- Ecological mitigation including controlled clearance, species translocation, and habitat enrichment programs.
- Erosion and sedimentation controls, safe drainage, and flood-resilient design of towers.
- Community health and safety management, labor influx controls, and traffic management.
- Occupational health and safety protocols, emergency preparedness, and worker training.
- A grievance redress mechanism (GRM) accessible to affected persons.
- Gender-sensitive labor management procedures.
- Enhanced stakeholder consultation throughout the project lifecycle.
- Community Social Responsibility (CSR) Activities such as providing fruit plants, community hall improvements, etc.

The ESMP assigns responsibilities, timelines, and monitoring indicators for mitigation actions, supported by the Environmental and Social Monitoring Plan (ESMoP).

Institutional Arrangements

NTNSP will lead project implementation through a dedicated Project Management Unit (PMU), which includes an Environmental and Social (E&S) Unit responsible for ensuring compliance with the ESMP and overseeing safeguard measures throughout the project lifecycle. This unit will work in coordination with contractors, local authorities, and oversight agencies such as the Divisional Secretariats, Department of Wildlife Conservation, Department of Forest Conservation, and the Central Environmental Authority. Field-level environmental divisions will handle daily monitoring and coordination at site level, while institutional strengthening through capacity-building programs will be carried out for NTNSP staff, contractors, and relevant stakeholders to enhance implementation effectiveness. In line with the AIIB requirements, a third-party monitoring agency will be engaged to independently verify compliance and project performance, ensuring transparency, adaptive management, timely grievance redress, and stakeholder engagement throughout the project duration as required.

Stakeholder Engagement

Extensive consultations were conducted with local communities, administrative bodies such as divisional secretariats, environmental regulating authorities, including forest and wildlife authorities, and civil society representatives. The concerns raised included monetary compensation requirements for land and vegetation/crop loss in home gardens and paddy fields, access disruptions, and potential ecological disturbances such as tree removal. These concerns have been incorporated into the proposed mitigation measures and the ESMP, and a multi-tiered GRM has been established to ensure grievances are effectively communicated, addressed, and reduced. Continuous stakeholder engagement and information disclosure are necessary throughout the project cycle to share project related information with the stakeholders including affected persons, and to receive their feedback on project activities and their impacts.

Conclusion and Recommendations

The ESIA concludes that the New Habarana - Kappalthurai 220 kV transmission line project is environmentally and socially feasible. No irreversible impacts are anticipated, and identified impacts can be mitigated through strict adherence to the ESMP. The project will enhance renewable energy integration, strengthen the Eastern Province grid, and contribute to Sri Lanka's transition towards sustainable energy.

It is recommended that project implementation proceed with:

- Full compliance with environmental and social safeguards.
- Continuous stakeholder engagement and grievance redress.
- Rigorous monitoring and reporting under ESMP and ESMoP.
- Independent oversight and adaptive management.

As the project falls in category 'B' as per the AIIB ESF guidelines, and under the NEA, the CEA has already given conditional approval dated 19th February 2024, for the project based on the IEE submitted to the CEA. Therefore, consultants recommended that the project be approved for AIIB funding.