Non-Technical Summary

Grid infrastructure modernization Programme in the Turkestan region of Kazakhstan

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CONTENTS

ACRONYMS AND ABBREVIATIONS

Acronym	Definition
AC	Alternating Current
AI	Artificial Intelligence
CO_2	Carbon Dioxide
EBRD	European Bank for Reconstruction and Development
ESAP	Environmental and Social Action Plan
ESP	Environmental and Social Policy
ESR	Environmental and Social Requirement
GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanism
ISO	International Organization for Standardization
JSC	Joint Stock Company
KUS	Kazakhstan Utility Systems LLP
LLP	Limited Liability Partnership
NTS	Non-Technical Summary
OHS	Occupational Health and Safety
PCB	Polychlorinated Biphenyl
SEP	Stakeholder Engagement Plan

1. INTRODUCTION

The European Bank for Reconstruction and Development (the "EBRD" or the "Bank") is considering providing a corporate loan to Ontustyk Zharyk Transit JSC ("OZhT"), a subsidiary of Kazakhstan Utility Systems LLP ("KUS"), to implement the Grid Infrastructure Modernisation Programme in the Turkestan region of Kazakhstan (the "Project" or "Modernisation Programme"). The proceeds of the loan will be used for the implementation of the Modernisation Programme for the period of 2025-2029 involving six sub-projects, namely:

- Reconstruction of 0.4–10 kV overhead lines: replacement of outdated bare-wire systems with insulated aerial bundled cables (ABC);
- Replacement of AC wire with high-temperature composite-core conductors;
- Reconstruction of transformer substations (TS/PSU): replacement of 537 outdated units with modern energy-efficient substations;
- Installation of 700,840 smart meters with supporting software and server infrastructure.

All modernization subprojects included in the scope of financing are categorised "B" in accordance with the EBRD Environmental and Social Policy (ESP) (2024) as the potential adverse E&S risks and/or impacts are generally site-specific, are largely reversible and can be avoided or mitigated by adhering to generally recognized good international industry practices (GIIP), guidelines, or design criteria.

The environmental and social impacts of the project have been reviewed as part of the loan approval process. This document represents a Non-Technical Summary (NTS) which has been developed as part of that assessment to highlight the potential impacts of the Project.

2. PROJECT OVERVIEW

2.1 Project Need

The Project forms part of the National Plan for Grid Modernization (2025–2029), which aims to transform Kazakhstan's electricity infrastructure into a more reliable, digitally enabled, and climate-resilient system. The Plan prioritizes investments in construction and rehabilitation of transmission lines, digitalization, automation, and smart metering, especially in under-served regions like Turkestan, where aging assets and underinvestment have constrained performance and reliability.

The Project investment will modernize the distribution infrastructure in Southern Kazakhstan, particularly in the Turkestan region, improving network reliability, reducing technical losses, and enabling better integration of renewable energy. These upgrades will strengthen system resilience, enhance quality of service for end users, and contribute to the broader decarbonization of the energy sector. Kazakhstan, spanning over 2,900 km, faces challenges in regional cooperation and connectivity, which are crucial for energy security and resilience.

Modernizing distribution infrastructure is essential to improve reliability, reduce technical losses, and enable the connection of decentralized renewable energy sources and future battery storage installations. Industrial development requires that the regional network shall be prepared to integrate the anticipated ~12GW of renewables and up to 1.5–1.8GW / 3.0–3.6GWh of storage by 2030. Grid modernization will also contribute to the continuity of clean energy delivery to homes and businesses and achieving carbon neutrality.

2.2 Project Implementing Entity

Kazakhstan Utility Systems LLP (KUS) is a vertically integrated energy holding and one of the largest utility providers in Kazakhstan. Its subsidiaries operate across Karaganda, East Kazakhstan, Mangystau, Turkestan, and Shymkent, covering the full electricity and heat supply chain from generation to transmission, distribution, and sales. KUS is a strategic contributor to national energy security, supporting households, businesses, and key industrial enterprises. The company prioritizes infrastructure modernization to improve efficiency, reliability, and sustainability, in line with Kazakhstan's broader energy transition goals.

The Project will be implemented by Ontustyk Zharyk Transit JSC (OZhT), which is part of KUS. OZhT is responsible for power transmission and distribution in Turkestan region and Shymkent city. Its 0.4–110 kV network spans 117,300 km², serving nearly 900 settlements, including Shymkent, Turkestan, Arys, and Kentau. OZhT operates through 16 regional electricity divisions and employs over 4,000 staff engaged in operations, maintenance, diagnostics, and emergency repairs, ensuring uninterrupted supply of electricity to diverse communities.

2.3 Project Location

The Project area is coinciding with OZhT service territory, which covers a large area of 117.3 thousand km², including 16 regional electricity network divisions and nearly 900 settlements, among them the cities of Shymkent, Arys, Turkestan, and Kentau. Transmission and distribution of electric energy by OZhT are carried out via 0.4-110 kV networks, consisting of three main junctions (Table 1 and Figure 1):

Table 1: OZhT network junctions and its coverage

Junction	Coverage
Shymkent junction	Shymkent 7 districts of Turkestan region (Sairam, Tolebi, Tulkubas, Ordabasy, Arys, Kazygurt, Saryagash)
Shardara junction	4 districts of Turkestan region (Zhetysai, Makhtaral, Shardara, Keles)
Kentau junction	Turkestan 5 districts of Turkestan region (Otrar, Baydibek, Suzak, Sauran, Kentau)

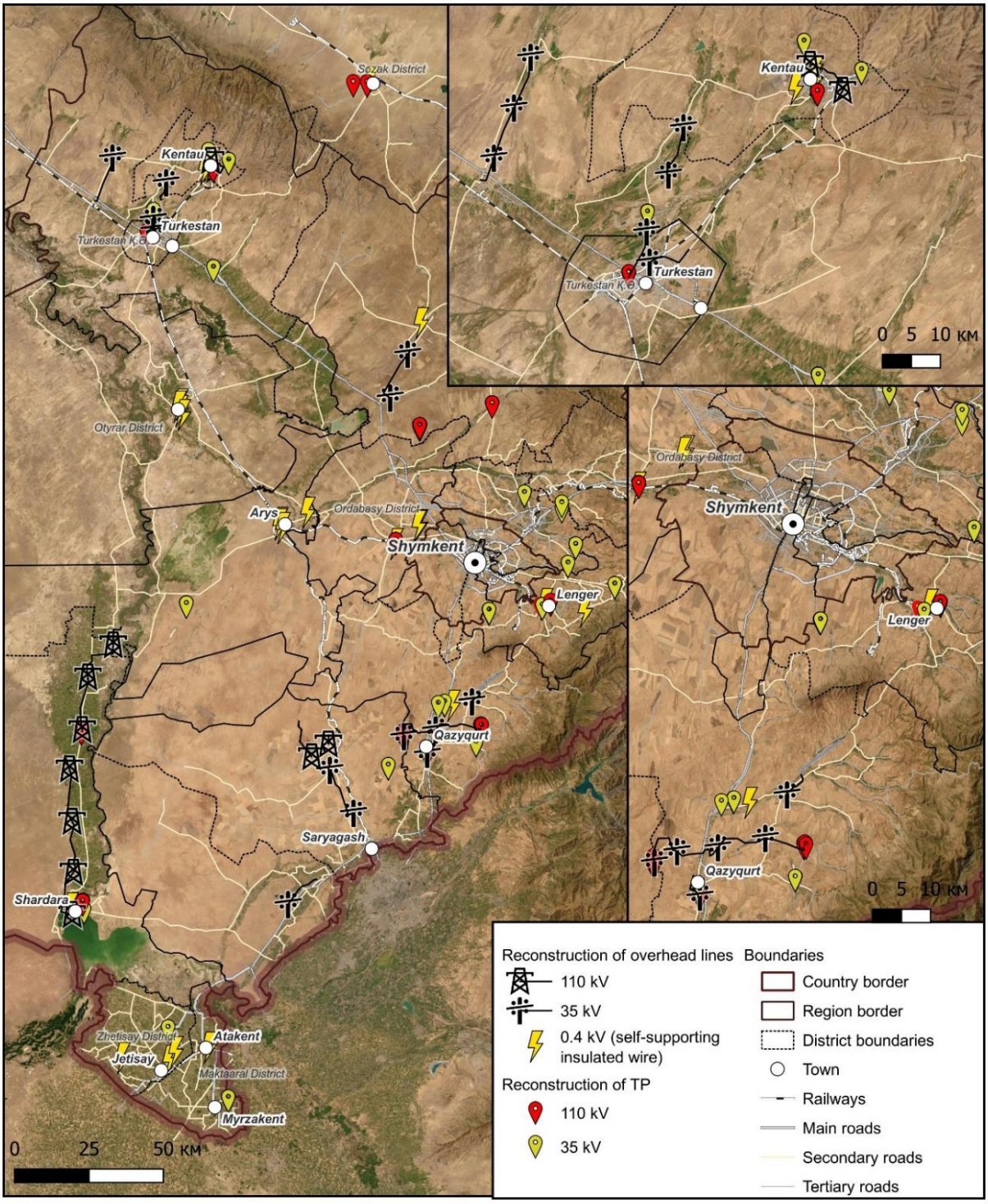

Figure 1: Project location

2.4 Project Components

The Project includes six sub-projects (Table 2):

Table 2: Project Components

#	Subproject	Description
1	Reconstruction of the 0.4-10 kV overhead line (2026-2029), including:	
1.1	– Reconstruction of the 0.4 kV overhead line	Replacement of overhead bare wires lines with with self-supporting insulated wire (SIP) is being carried out to improve the reliability, safety and economic efficiency of power supply. In line with wire, new piles will be installed, as well as some packaged substation units will be replaced and some of them will be added to the network.
1.2	– Reconstruction of 6-10 kV overhead lines	
2	Replacement of the AC wire with a high-temperature wire (2026)	The project involves replacing old conductors on 35 kV overhead power lines (OHL) in Shymkent with new high-temperature composite-core conductors of the ACCC Helsinki type.
3	Reconstruction of TS/CTS (2026-2029)	Replacement of 537 items of outdated substations and packaged units.
4	Introduction of Smart meters (2025-2027)	Replacement of 700,840 metering items at end users and introduction of relevant software and server rooms for data processing

3. ENVIRONMENTAL AND SOCIAL BENEFITS AND ADVERSE IMPACTS

3.1 Project Benefits

The Project will generate a wide range of positive environmental and social benefits through the modernization of the electricity grid and the deployment of advanced technologies. These improvements will enhance the reliability, safety, and efficiency of power supply, while also supporting Kazakhstan's transition toward a lower-carbon energy system.

Key benefits include:

- **Improved public safety and service reliability**, with reduced accident risks, fewer outages, and lower fire hazards.
- **Environmental gains**, such as reduced energy losses, lower CO_2 emissions, minimized land disturbance, and elimination of hazardous materials from outdated infrastructure.
- **Economic and social contributions**, including job creation in both construction and skilled technical roles, cost savings for consumers, and support for urban and industrial growth.
- **Technological modernization**, featuring digital billing, smart grid integration, AI-driven efficiency, and faster fault detection, which together foster resilience and long-term sustainability of the power system.

The sub-projects and their associated positive impacts (benefits) are summarized in Table 3 below.

Table 3: Project Benefits

Sub-project	Positive Impacts (Benefits)
Reconstruction of the 0.4–10 kV Overhead Line (2026–2029)	✓ Reduced accident risks: insulated lines minimize short circuits, breaks, and fires from trees/animals
	✓ Less tree clearing compared to bare overhead lines
	✓ Longer lifespan (40+ years), reducing replacement frequency and waste
	✓ No hazardous materials (unlike old lead-sheathed cables)
	✓ Improved power reliability with fewer outages
	✓ Enhanced public safety: lower electrocution risk during line breaks
	✓ Better aesthetics, especially in urban areas
	✓ Temporary job creation during construction
Replacement of AC Wire with High-Temperature Wire (2026)	✓ Reduced energy losses, lowering CO_2 emissions
	✓ Longer lifespan of composite-core conductors, less frequent replacement
	✓ Minimal land disturbance, work stays within existing corridors
	✓ Improved reliability and power quality
	✓ Increased capacity for urban growth and industrial demand
	✓ Enhanced safety with modern insulators and grounding
	✓ Temporary construction jobs
Reconstruction of Substations (TS/PSU) (2026–2029)	✓ 30–50% reduction in energy losses from modern transformers
	✓ Elimination of oil hazards from outdated transformers
	✓ Lower noise emissions (10–15 dB quieter)
	✓ Improved power reliability for hospitals, schools, and businesses

Sub-project	Positive Impacts (Benefits)
	✓ Job creation in construction and long-term skilled maintenance roles
	✓ Enhanced public safety
Installation of Smart Meters (2025–2027)	✓ Reduced carbon footprint from energy savings
	✓ Optimized grid efficiency and reduced losses
	✓ Lower paper use via digital billing
	✓ Transparent billing and real-time consumption data
	✓ Consumer savings from reduced electricity use
	✓ Faster fault detection and improved reliability
	✓ Reduced electricity theft
	✓ Workforce upskilling: transition to technical/data roles

3.2 Adverse Impacts and Mitigation Measures

The Project is categorized “B” under the EBRD Environmental and Social Policy (ESP 2024), as impacts are expected to be site-specific, largely reversible, and manageable through good international industry practice (GIIP). Also, in line with national legislation, the sub-projects fall under IV category of environmental hazard which means fairly minor or negligible environmental impacts.

As part of the environmental and social assessment of the Project, key adverse impacts and risks have been identified. Most of these impacts and risks are of **negligible** to **minor** significance, with only a few classified as **moderate**. Key risks and impacts include generation of demolition and electronic waste, occupational health and safety (OHS) risks for contractors’ workers, tariff increases linked to investment costs, and emerging challenges such as increased energy demand for data systems, workforce reductions in traditional grid roles, and cybersecurity concerns. These impacts are expected to be manageable through the implementation of targeted mitigation measures, as summarized in Table 3.2 below.

In addition, to ensure full alignment with the EBRD’s Environmental and Social Policy, OZhT and its contractors will develop and implement robust Environmental and Social Management Plans (ESMPs). These plans will integrate mitigation measures to address a wide range of project-related impacts and risks, including waste handling and disposal, noise and vibration, soil disturbance, hazardous materials management, occupational and community health and safety, security, and labor protection. The ESMPs will serve as a practical framework to manage risks, safeguard workers and communities, and ensure that the Project is implemented in line with Good International Industry Practice (GIIP).

Table 3.2. Summary of key adverse impacts and mitigation measures

Legend: **Adverse Impact Significance**

Moderate	Minor	Negligible	No impact

Adverse Impact	Proposed mitigation measures				
	Reconstruction of the 0.4–10 kV Overhead Line	Replacement of AC Wire with High-Temperature Wire	Reconstruction of Substations (TS/PSU)	Installation of Smart Meters	
Generation of demolition and electronic waste					Use licensed contractors for waste recycling and disposal; Ensure that waste management is performed in line with national legislation and ESMP
Tariffs increase					Clear communication with customers on the Project's necessity and long-term benefits, and engagement with authorities to identify support measures for vulnerable groups (e.g., subsidies, staggered tariffs)
OHS risks for contractors' workers					Enhance control over contractors OHS performance; development and implementation of OHS Management Plans by contractors
Increased energy use for supporting data systems and computing infrastructure					Use renewable-powered data centers, implement energy-efficient algorithms and cooling systems etc.
Workforce reductions (meter readers, technicians)					Development and implementation of a Retrenchment Plan including retraining programs in consultation with workers
Cybersecurity and data privacy risks					Implementation of robust cybersecurity frameworks, education of consumers on data privacy

4. ALIGNMENT WITH EBRD ENVIRONEMNTAL AND SOCIAL REQUIREMENTS

Since the nature of the EBRD's financing represents a corporate loan and implementation of the majority of subprojects is at its early stage, in line with EBRD's E&S Policy, a corporate audit of OZhT's E&S practices was conducted in order to assess its compliance with EBRD ESRs.

The assessment identified no material non-compliance issues. The Company observes the requirements of national environmental and social legislation, already operates under a certified Integrated Management System (ISO 9001, ISO 45001), maintains strong OHS performance, and has introduced positive measures such as energy-efficiency initiatives, transformer-oil regeneration, PCB phase-out planning, and installation of bird diverters.

A number of the environmental and social management improvements were included in an Environmental and Social Action Plan (ESAP) the inter alia: Project-specific E&S management systems and policies, expanding contractor oversight, improving worker grievance mechanisms and labour monitoring, formalising waste and hazardous materials management, strengthening biodiversity and cultural heritage procedures, and broadening stakeholder engagement practices.

5. ENGAGEMENT WITH STAKEHOLDERS

A Stakeholder Engagement Plan (SEP) has been developed for the Project and will be implemented by the Company throughout all Project phases. The SEP describes the mechanisms by which public, especially local communities, and other stakeholders are informed about the Project and given opportunities to provide comments and input to the Project development. The SEP is a "living" document and will be updated along with the Project progress reflecting needs for and specific of further engagement with stakeholders.

Activities included as part of the SEP refer to engaging with the affected communities to ensure relevant information is disclosed in a meaningful way and their key concerns in relation to the Project are recorded, understood and adequately addressed. Additionally, the SEP includes a grievance redress mechanism (GRM) to be implemented by the Company to allow external stakeholders, particularly community members, to submit and seek resolution for any grievances they may have with regard to the Project.

6. PROJECT MONITORING

In accordance with the EBRD's Environmental and Social Policy, the Bank will review annual environmental and social reports on the environmental and social performance of the Project, the implementation of the ESAP and the compliance of the Project with the environmental and social covenants in the financing agreements. The EBRD may also periodically verify the monitoring information prepared by the Project through the site visits.

7. PROJECT FEEDBACK

We welcome your views on the Project. Interested parties are welcome to contact Ontustyk Zharyk Transit to ask questions or provide comments through any of the methods below: Nurmukhamed Karabekov – Deputy Technical Director

Online at: www.ojt.kz

By email at: n.karabekov@ojt.kz

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